



QST

A MAGAZINE DEVOTED EXCLUSIVELY TO THE WIRELESS AMATEUR.

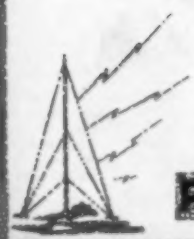


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QST

Volume II

MAY, 1917

No. VI

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Hiram Percy Maxim, President

Clarence D. Tuska, Manager and Editor

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THE QST PUBLISHING COMPANY, INC.
HARTFORD, CONN.

War Measure!



**WE ARE AT WAR. AMATEUR WIRELESS
IS AT A STANDSTILL. OUR STATIONS ARE
CLOSED.**

War interest in wireless increases the number of QST readers more rapidly than ever before, but many of our advertisers cannot afford to continue.

To off-set the temporary decrease in revenue, we are printing less pages in QST. As rapidly as the amateur support warrants it, we will get back to our regular number of pages.

In the meantime, lend us your hand. We need your help; your support.

—EDITOR

JUN 14 1917

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Q — S — T

A Magazine Devoted Exclusively
to the Radio Amateur

WAR!

DEPARTMENT OF COMMERCE NAVIGATION SERVICE

Office of Radio Inspector

To all Radio Experimenters,

Sirs:

By virtue of the authority given the President of the United States by an act of Congress, approved August 13, 1912, entitled "An Act to Regulate Radio Communication," and of all other authority vested in him, and in pursuance of an order issued by the President of the United States, I hereby direct the immediate closing of all stations for radio communications, both transmitting and receiving, owned or operated by you. In order fully to carry this order into effect, I direct that the antennae and all aerial wires be immediately lowered to the ground, and that all radio apparatus both for transmitting and receiving be disconnected from both the antennae and ground circuits and that it otherwise be rendered inoperative both for transmitting and receiving any radio messages or signals, and that it so remain until this order is revoked. Immediate compliance with this order is insisted upon and will be strictly enforced. Please report on the enclosed blank your compliance with this order, a failure to return such blank promptly will lead to a rigid investigation.

Lieutenant, U. S. Navy,

District Communication Superintendent.

The lightning has struck. We are at war with Germany. As we write, the aeri-als of tens of thousands of us are being lowered to earth, and our instruments disconnected. We have been ordered to do this by the Navy Department.

Every amateur station is closed down. The lid is on and clamped tightly for a period of time, the duration of which no man knows. All amateur traffic is halted where it happened to stand. All plans for improvements are cancelled. All the plans of our manufacturers are in mid-air. In short, the great amateur wireless advance in these United States is stopped.

It is too early to form any intelligent ideas of the outcome. We of the A. R. R. L. have given much thought to the matter during the months leading up to the final declaration of War, even to the holding of special Director meetings, drawing up resolutions and sending a Committee to Washington to appear before the Secretary of the Navy. But it is too early for any action to be taken. There are too many other more pressing problems confronting the authorities. Order will, however, eventually come out of the chaos, and when it does, we amateurs will undoubtedly be called upon for a very im-

portant and honorable duty, that of supplying operators and apparatus for Government service, and policing the United States radio-wise. Our resolution as already presented to the Government is as follows, and will give an idea of what may be expected in the future:

RESOLUTION

Whereas, the American Radio Relay League is now and for three years has been engaged in developing the science of radio communication; and

Whereas, it has more than three thousand members, many of them experts in radio communication; and

Whereas, the American Radio Relay League through its membership could draw to its assistance the important local facilities of its members and, through an efficient system of inspection of each district, could furnish promptly all detailed information as to conditions existing in said locality as to every wireless plant in operation; and

Whereas, the Board of Direction of the American Radio Relay League for the foregoing reasons is prepared to undertake the organization and direction of a systematic plan to eliminate the operation of secret illegal wireless plants, which will be used to supply the enemy with traitorous information, thereby aiding the Government of the United States in national defence;

Therefore, be it resolved, that in the emergency now existing the American Radio Relay League places its services and all its resources at the disposal of the United States Government.

HIRAM PERCY MAXIM,

President.

ARTHUR A. HEBERT,

General Manager.

While our stations are closed, we should help to the limit of our ability to supply the operators and apparatus for the manning and equipping of the important patrol stations along our coasts. Both are needed, as is evidenced by the fact that our President and General Manager were called into consultation by the authorities and asked to help secure them. Operators are wanted who can work headquarters stations, and receiving apparatus

is wanted to equip these stations. The transmitting apparatus is available. Four operators are wanted at each headquarters station. They will work six hours per day under a commissioned officer of the Navy. They will be allowed \$60 for uniform and equipment when they start in, and will be paid \$30 per month, or more according to operating ability. Until quarters are provided, they will be allowed \$1.50 a day for subsistence. The experience will be of the greatest benefit and value, and in the years to come, every one who served his time will be proud of his record. The enrollment is for the duration of the War only. Application should be made to the nearest Navy Yard, and no time should be lost so as to get the desirable assignments.

There is the situation, fellows. Step up promptly and get into the game with the spirit and the snap for which the A. R. R. L. is famous. If we cannot work our own stations, we can easily enough work one of Uncle Sam's and we are told it is intensely interesting.

OPERATING HINTS

Taking the key apart and giving the trunnions a coat of shellac will not make it work any better.

Static may be decreased to a surprising degree by connecting a resistance across the phones. Two inches of No. 4 wire recommended.

The rotary will stop more quickly if the left hand is inserted in the works.

It is often possible to make a Y like an X and get away with it.

The number of dashes in a 9 and the number of dots in a 5 may be varied at will.

LEGAL NOTES

Unfortunately the proposed measure, legalizing Lynch law in cases of excessive use of 73 and O M failed to pass the upper house of Congress.

A New York "Kangaroo court" has decided that QRM, if deliberate, justified assault and battery. A dissenting opinion arose from the plaintiff.

Rotten Fists

By The Old Man

Well, fellows, War or no War the Old Man insists on having us cheer up by laughing at his "rotten stuff." "Rotten Fists" is so funny that you will laugh and forget.—Editor.

IF old Morse is dug up some day and they find him turned over in his grave, it will be because of certain rotten fists I could mention. The old boy did a good job when he invented the dot and dash business, and it is just plain wickedness to mutilate it the way some of these smart alecks do with their swinging and sliding. What's the matter with making a dot a dot, and a dash a dash, anyway? There is no half way business between them. You can not cross the breed to save your life, and why it is fashionable to try it, beats me.

I have been copying everything that came in lately, on account of these war stories, and believe me, I have heard some strange sending. The other night there was a ship calling what I took to be AZY, but as WSY answered, I saw I was wrong. The operator on the ship had a message and WSY told him to go ahead with it. The ship was a K something, and was evidently coming up or going down the Atlantic Coast. At first, I thought I had some nervous disorder. I'll be darned if I could copy what that gink was sending. It was going to somebody who I guess was at the Biltmore Hotel, New York City, but what in time it was about, I could not tell. I could not seem to catch hold anywhere long enough to stick. There was a lot of signals I knew were not in Continental or American Morse and I began taking an interest in how much WSY was getting.

Well sir, WSY gave a long profane pause, after that ship operator finished. You can always tell what the fellow at the other end is thinking by his pause. Ever notice it? I smelled smoke and by cracky, I smelled right. WSY got just about as much as I got, and I knew just what it

was he wanted to say, but didn't dare. In printable form it was—"Cut out the swing you blithering idiot and for gawd-sake send it the way old Morse intended you to send it." The K—came gayly back and QSZed everything. He swung and slid and had a very fashionable time of it all by himself. You could not tell what were dots and what were dashes to save your life. His W was TM every time. An S was D or a TI, you could take your choice. His L was a very respectable Z. His numbers were fierce. They sounded like commas or some of those other bum punctuation marks nobody ever is dead sure of and always fills in later or leaves out altogether.

He swung his gay young way through the message and I managed to guess what I missed. WSY must have been several hundred miles nearer, but he gave no idea of getting any of it at all.

There is no QR or QS for "Cut out the style and send like a white man you slab sided galoot," so all WSY could do was to look her over and give it up and give a GA ALL. And, mind, you, all this was using up time entirely unnecessary because K—s sigs, must have pounded in at WSY if they were so QSA at my station.

Well, he gave it all over again and this time he slowed down to maybe fifteen a minute. At that speed you simply cannot put on the lugs. You have to send some where near the way Morse intended you should. I got it all O. K. that time, but WSY evidently was sore or something for he made him send the name and signature twice again after telling him his spacing was bad!!

Now, why could not that young man have sent plain dots and dashes and spaces in the first place. He used up just exactly five times as much valuable time as he

needed to, or twenty mins. instead of four. And he was a commercial operator and supposed to know better.

This thing had no more than got itself untangled when, happening to tune down a bit, I heard some amateur calling me. At least it sounded as though it might be I. He had a similar case of swinging, and by gum, I was not sure who he was calling when he got thru and signed. I recognized the sign all right—one of our old friends. Thinks I, if he wants me he will have to speak up better than that so I stuck around and listened. Well, sir, darned if 8AEZ didn't think he was the one wanted. 9ZN believed he was, 2AGJ had the nerve to think he was the party and some few other lesser lights took it to heart also. There followed a general all around mixup in which some called the right call letters, others called wrong and others called on a CQ. QPM simply boiled over. Each fellow thought the other was "intentionally interfering." Everbody got somebody, another one called somebody a fat head, and somebody else got all puckered up over being called a Ham. It probably took half an hour to straighten this mess out and all on account of a rotten fist.

That same night somebody not so terribly far from Cleveland tried to get something through to 2PM. For some time past, his fist had been showing signs of getting stylish and once he was told of it. This particular night, he was feeling especially pert, for his swing was more than unusually bad. He finally got 2ZS or 2ZL or somebody over east, and gave him a long song and dance about something or other that was heavy on his chest. There was considerable QRM, at the time, and I didn't get it quite straight. Neither did the station he was sending it to, for he didn't answer at all. Our friend sent a query after waiting a while and then the eastern station came back with a "sorry OM can't read u hr. tri agn." Then some kind-hearted gink in between blundered into the game and offered to QSR. The friend took him up and gave him the msg. putting just a few more frills in the way of swing. I copied it just to see how rotten he would get it. I was not mixed up in the job in any way and so

had the chance to be an onlooker and enjoy myself.

The kind hearted one over in Penna. got the reward of the peacemaker. He let himself in for the worst mix up he ever heard of. The next time he blunders in to help out somebody he will first take a slant at the kind of a fist he has. If it swings and slurs the dots so they sound like dashes, I will lay a fair size bet that he leaves the buzz saw for some one else to monkey with. Just look at the way it turned out:—

Friend, up around Cleveland way gave it to Kind-heart over in Penna. He put so much English on it that Kind-heart couldn't get it first time, so he asked for a repeat. He was a little new at the cruel relay game, I reckon, and he did not have the nerve to ask for all the repeat he needed. Then when he got what he asked for, all frilled up with swing business so I could not read it, he was just where he was when he started, except perhaps a little bit worse, because what he got the second time did not check with what he got the first. Then he got fussed, and like every timid youngster, let it go and trusted to luck that he could piece it together somehow. He was so young he did not want the rest of the state to hear him ask for another repeat, when the fault was the original bone head with the confounded swing.

He said he would QSR the message and evidently went into executive session with himself while he tried to puzzle it out. My copy indicated nothing exactly definite, owing to the rotten swing. There was enough to show that the poor boob was trying to find out from Salt Godley of the Adams Hogan Co., when it was likely that shipment would be made of a pair of gone tumors, or something to that effect. As I said, I could not get it exactly, but only approx. Well, dear little cuty over in Penna. must have had quite a brain storm all by himself, because when he finally bucked up and got his man over East he gave him something like this, which anybody with even a bad squint can see is all wrong:—Hr. nr 1 from Blank via Blank to Salty O. Helly care of Adams Express Co. Mount Despair,

(Continued on Page 12)

An Enlarged A. R. R. L.

THREE years ago this month, there was sown a lusty seed. It grew rapidly, once it was given warmth and encouragement. It is a strong tree today, and we who enjoy association under its spreading branches call it the A. R. R. L.

At first it was possible for two people working once in a while of an evening, to handle its business matters. Later these two found it required all their spare time. Still later, they found that all of the time they could spare, was not enough to handle the ever widening circle. Then it was decided to call for help, and the SOS went forth to the best known amateurs within reach. They were asked to foregather on a certain evening at The Engineers Club in New York City, and when the fateful evening came around, there were the following facing each other:—

2ZH, A. A. Hebert, Nutley, N. J.
 2ZS, C. R. Runyon, Jr., Yonkers, N. Y.
 2ZL, J. O. Smith, Valley Stream, N. Y.
 2RL, V. F. Camp, Brightwaters, N. Y.
 1ZM, H. P. Maxim, Hartford, Conn.
 1ZT, C. D. Tuska, Hartford, Conn.

After getting used to looking at, instead of listening to each other, these gentlemen formed themselves into a Committee to draw up a Constitution and elect a Board of Direction, and officers. Notwithstanding they labored far into the night, many meetings were necessary, but each gave of his time and money until it was done. The Constitution printed in another column was finally adopted. A Board of Direction and officers as follows, were elected:

President, Hiram Percy Maxim.
 Vice President and General Manager, Arthur A. Hebert.
 Secretary, Clarence D. Tuska.
 Treasurer, C. R. Runyon, Jr.
 J. O. Smith, Valley Stream, Long Island, N. Y.
 R. H. G. Mathews, Chicago, Ills.
 John C. Cooper, Jr., Jacksonville, Fla.

F. M. Corlett, Dallas, Texas.
 W. H. Smith, Denver, Col.
 H. C. Seefred, Los Angeles, Cal.
 V. F. Camp, Brightwaters, N. Y.
 H. L. Stanley, Babylon, N. Y.
 W. T. Fraser, Buffalo, N. Y.
 W. T. Gravely, Danville, Va.
 T. E. Gaty, Morristown, N. J.
 Miller R. Hutchison, Orange, N. J.

Additional Directors from other large centers will be elected as soon as nominations are made.

Then the six Divisions of the country stated in the Constitution were given to the following Division Managers, these to supercede the old Trunk Line Managers:

ATLANTIC—J. O. Smith, Valley Stream, L. I., N. Y.

EAST GULF—J. C. Cooper, Jr., Jacksonville, Fla.

CENTRAL—R. H. G. Mathews, Chicago, Ills.

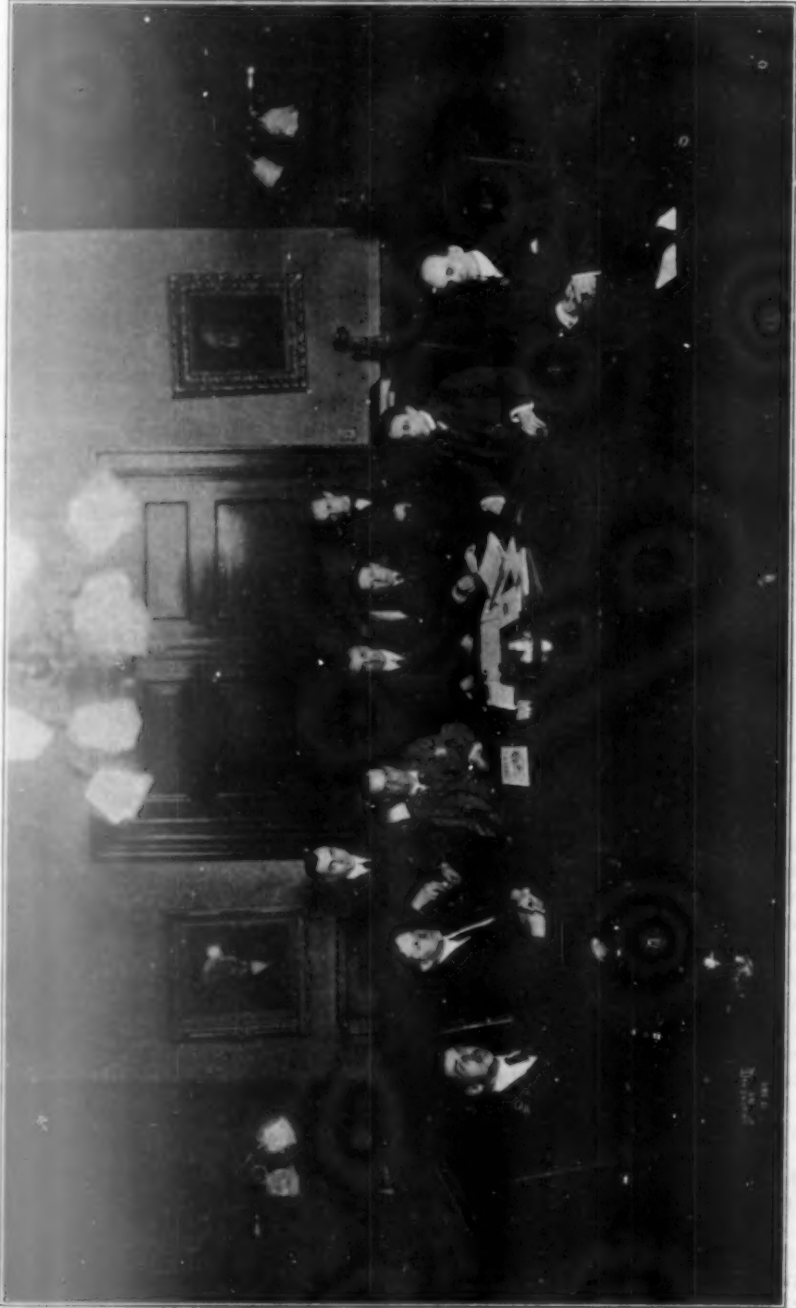
WEST GULF—Frank M. Corlett, Dallas, Texas.

ROCKY MOUNTAIN—W. H. Smith, Denver, Col.

PACIFIC—H. C. Seefred, Los Angeles, Cal.

The gentlemen appoint their various District Superintendents and the latter, their Assistant Superintendents, and the whole constitutes an operating department which will eventually spread over the entire country. The arrangement makes for wide representation, general interest and great efficiency.

The general management of the affairs of the League, henceforth will be in the hands of the General Manager, who is responsible to the Board of Direction, and the Headquarters will be at New York City, instead of Hartford. Mr. Hebert, Manager of Eastern Trunk Lines under the old arrangement is General Manager under the new, and his address will be 50



BOARD OF DIRECTION MEETING

Left to right: C. D. Tuska, Secretary and Editor of QST, H. L. Stanley, Victor F. Camp, T. E. Gaty, H. P. Maxim, President, A. A. Hebert, General Manager, C. R. Runyon, Jr., Treas., Miller R. Hutchison, J. O. Smith, Manager Atlantic Division.

Church St., New York City, until further notice. All communications regarding League matters should go to him and all concerning QST, should go as usual to Hartford.

When the time comes for the Government to make use of our organization for helping prosecute the War, we will not be found wanting with this new arrangement. Our Board of Direction is as fine and strong as some of the most powerful corporations. It certainly bids well for the future.

CONSTITUTION.

Article I.

Name and Object.

Sec. 1. The name of this organization shall be THE AMERICAN RADIO RELAY LEAGUE, INCORPORATED.

Sec. 2. The object of this organization shall be the promotion of interest in radio communication, in such subjects as are allied thereto, and in the relaying of messages without charge.

Sec. 3. The executive office for the transaction of the general business of the League shall be permanently located and maintained in the City of New York, County of New York, New York.

Article II.

Membership.

Sec. 1. Anyone interested or engaged in radio telegraphy or telephony shall be eligible to membership. Application for membership shall be submitted to the Executive Committee, and favorable action by this Committee shall elect to membership.

Sec. 2. There shall be an honorary life membership, the fee for which shall be twenty-five dollars.

Article III.

Sec. 1. The annual dues shall be two dollars (\$2.00) per year, payable in advance on the first day of January, for the ensuing year.

Sec. 2. Persons admitted to membership before July first of any year shall pay a full year's dues; between July first and October first they shall pay six month's dues; any person admitted to membership after October first, upon payment of a full

year's dues, shall be considered as paid up for the current and also for the following year.

Sec. 3. Any member whose dues are more than three months in arrears shall be notified by the General Manager, and he shall cease to receive all publications issued by the League. Should his dues not be paid when they become six months in arrears, he shall lose the right to vote. Should his dues become nine months in arrears, he shall again be notified in form prescribed by the Board of Direction, and if such dues become one year in arrears he shall forfeit his connection with the League. The Board of Direction may, however, for cause demand by it sufficient, extend the time of payment and the application of these penalties.

Article IV.

Officers.

Sec. 1. The governing body shall be a PRESIDENT, VICE-PRESIDENT, GENERAL MANAGER, SECRETARY, TREASURER and DIRECTORS, who shall together constitute the BOARD OF DIRECTION.

Sec. 2. The terms of all Officers shall be two years, and shall begin at the close of the Bi-Annual Meeting at which election is made. The terms of all officers shall continue until their successors are duly elected.

Sec. 3. There shall be an Executive Committee of five members elected by the Board of Direction to perform such duties as are allotted to it from time to time by the Board.

Article V.

Management.

Sec. 1. The General Manager shall manage the affairs of the League including the collections of all moneys due the League, and he shall have supervision of the Operating Department of the League. He shall at all times be under the authority of the Board of Direction. He shall also be Vice-President and act in place of the President in the event of the absence of the latter. He shall make an annual report at Annual Meetings.

Sec. 2. The Board of Direction shall



A. R. R. L. DIVISIONS

be the final authority in all matters concerning the League.

Sec. 3. The President shall act as Chairman and preside at all meetings of the Board of Direction, and shall be a member exofficio of all committees.

Sec. 4. The Treasurer shall receive all moneys and deposit the same in the name of the League in a depository specified by the Board of Direction. He shall make all disbursements by check in the name of the League when signed by any two officers, and he is also by virtue of his office Assistant Secretary. He shall make a report to the Board of Direction at each annual meeting.

Sec. 5. The Secretary shall attend all meetings of the Board of Direction, and shall record the proceedings thereof, and he is also by virtue of his office Assistant Treasurer.

Article VI.

Operating.

Sec. 1. There shall be an Operating Department consisting of six Divisions in charge of six Managers appointed by the Board of Direction, who will be under the supervision of the General Manager.

Sec. 2. The six divisions shall be as follows: ATLANTIC; Which shall embrace the States of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey, Delaware, Maryland, District of Columbia, and Virginia.

EAST GULF, which shall embrace the States of Arkansas, Louisiana, Mississippi, Alabama, Georgia, Tennessee, North Carolina, South Carolina and Florida.

CENTRAL, which shall embrace the States of Ohio, Michigan, West Virginia, Kentucky, Indiana, Illinois, Wisconsin, Missouri, Kansas, Nebraska, Iowa, Minnesota, North Dakota and South Dakota.

WEST GULF, which shall embrace the States of Arizona, New Mexico, Texas and Oklahoma.

ROCKY MOUNTAIN, which shall embrace the states of Montana, Wyoming, Colorado, Utah and Idaho.

PACIFIC, which shall embrace the States of Washington, Oregon, California,

and Nevada.

Sec. 3. District Superintendents shall be appointed by the respective Division Managers with the approval of the General Manager.

Sec. 4. The District Superintendents shall be under the authority of and directly responsible to the Division Managers, and the members shall abide by the traffic regulations made by their respective District Superintendents.

Article VII.

Meetings.

Sec. 1. There shall be an Annual Meeting of the Board of Direction at which the annual reports shall be submitted and the affairs of the League acted upon. This meeting shall take place the third Saturday of February.

Sec. 2. In addition to the Annual meetings, Special meetings may be called by the order of the President or a majority of the Board of Direction, notices to that effect being given by the General Manager at least forty-eight hours in advance of said meetings.

A quorum at any meeting shall consist of the Board of Direction, either present in person or by proxy.

Article VIII.

Nomination and Election of Officers

One month before the Bi-Annual Meeting nominations for officers and Directors shall be submitted to the membership for vote. The ballots shall be counted at the regular meeting of the Board, and the election decided by the latter.

Article IX.

Amendments

Sec. 1. This Constitution may be revised or amended at any regular or special meeting by a two-thirds vote of the Board of Direction present, except Section 3 of Article 1, which section may be amended only by a four-fifths vote of the Board of Direction.

Sec. 2. Amendment to or change in the constitution of the League may only be made by the Board of Direction, unless

notice of the same has been given in writing at least one month before the meeting at which the action is to be taken.

HIRAM PERCY MAXIM,
CLARENCE D. TUSKA,
J. OWEN SMITH,
VICTOR F. CAMP,
C. R. RUNYON, JR.,
ARTHUR A. HEBERT.

Committee on Constitution.
March 10th, 1917.

ROTTEN FISTS

Continued from Page 6

N. J. Sneeze admire probate dates ship mint my pair phoney tuber ordered like flabbys Sig Blank.

Any one can tell at a glance there is no sense in such stuff as that, and yet that dear boy spent a good hour deciding that this rot was the correct dope. He was heard by Friend, and say, fellows, you who heard the blow up that followed must sure have smiled. Friend went straight through the roof of his shack and must have weakened the field on his rotary motor when he lit, because his tone went up fourteen octaves and his speed fully up to thirty-five when he tried to head that fool msg. off. He called the poor duffer over in Penna. and forgot all his swing and sent dots and dashes which were mostly dashes and started the worst run of static we have had here-about this season. Company came just as he was finishing off and I could not stay and hear the funeral services. They tell me it lasted for several hours. I will believe any one who tells me that there is nothing left of that

set over in Penna. but a few traces of melted copper.

Well, that's the way she goes, when you start these funny things with the code. May not be so much of it after a bit. Looks like we fellows might have to cut out tickling the key pretty soon. So long boys. C U next QST SK.

STATION HINTS

Money may be saved by building the transmitting condenser with tinfoil lugs. Do not do this unless you are not going to Heaven anyway.

Masts have been erected with the guy anchors within 20 feet of the base. They fell down.

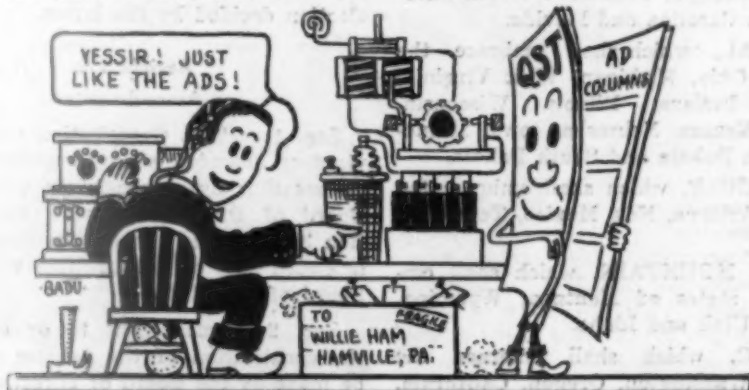
Run your rotary at 6000 r. p. m. with about $\frac{1}{8}$ inch wobble. A note exactly like that of a boiler factory will be secured.

The condenser circuit must have a low high-frequency resistance. A good conductor is a cable of 500 No. 20 enamel wires. The helix clips should have 500 jaws to grip the strands.

Rebuild your detector so that the cup faces down and the catwhisker is operated by means of a worm gear. Then use it for a paper weight.

A very good electric heater is made of two spark coils with iron bars clamped across the ends of the cores. Connect the primaries in series and use a water rheostat to limit the current. The rheostat does the heating. As a heater this device is over 80% efficient.

A coppered fuse looks as good as a new one and does not blow out.





WAR!

Well, fellow amateurs, WAR has come to our good old Star Spangled Banner, and all the sacrifices we have dimly dreamed in the past, are now up to us to make. Yesterday's fancies are today's realities, and mighty grim ones at that. Our stations are all closed. At this writing, there is no knowledge when we shall be allowed to reopen. Your guess is as good as ours. But there is one thing we do know positively. That is that even if we may not operate our own stations, we may operate our Uncle Sam's. And this constitutes the most golden of all golden opportunities.

We are asked by our Country to come and help in the hour of need with our special radio knowledge and training. Radio operators are wanted by both Navy and Army and the service is made more agreeable than any military service ever before known. We are asked to serve

only for the War if we prefer, and we are given living conditions, pay and training of the most favorable kind. No one of our membership in good health and free from dependents should hesitate a moment to enroll. To those who do not, it will be the one big regret of their lives in the years to come.

There will be a German War Veterans Association, and Honor Rolls, and you and yours will be very proud to have your name among the others. You can put it there now. You cannot later. And when we are all opened up again with new and better equipment, and our A. R. R. L. has acquired the strength of having passed through the fire, then will those who have done their bit be proud of it, and those who have not, will be very, very sorry.

BIG DEMAND COMING

The more we listen to what is told us, the more it looks like a record demand for amateur wireless goods just as soon as the military conditions straighten themselves out. A while ago it was a shortage of operators. One single Naval Headquarters has said that they want five hundred good amateur operators. Now, comes the Naval Reserve asking for amateur wireless apparatus for the Mosquito Fleet. There are better than one thousand small boats which are to be used for scouting and patrol duty and of these over eight hundred need short wave wireless appa-

tus immediately. Naturally the apparatus is not available. We were called on the long distance telephone to be asked whether the amateurs of the A. R. R. L. would be willing to let the Navy have their apparatus where it was suitable. Of course our answer was that it would have to be put up to the membership, as we could not speak for them on a matter of this kind. A plan was discussed for circularizing our membership and finding out just what could be obtained in the way of apparatus suitable for transmitting and receiving on small craft. There will be more

of this later. The point is that this big consumption of wireless apparatus is going to be the cause of a big expansion in manufacture.

According to our lights the thing will work out about like this:—A great many amateurs having good receiving and transmitting apparatus will be prevailed upon to sell it at a fair valuation. This money will be put away and will start burning a hole in its receptacle. The advertising columns of QST and descriptive circulars will be studied with minute care. In the course of events a little more money will leak in and swell the fund just a trifle. Then the military situation will gradually

clear up as regards wireless and the day will come when a lot of amateurs will decide to place orders. These orders will all tumble in at about the same time. The manufacturers will be swamped and there will be the usual scrap to see who gets his stuff first.

The result is going to be a tremendous improvement in station equipment. Newer and better apparatus will certainly be installed in the place of the old stuff. Amateur station performance will be proportionately improved, and interest generally will be increased. Remember this little prophecy, fellows.

MENTIONING QST

Some wireless pessimist told us once that the only thing which really was what it was cracked up to be, was —ICE. There is another, and it is TEAM PLAY. Some time ago we asked you fellows to play your part of the game in helping toward success, this part being to mention QST whenever you wrote to an advertiser, and also to make an effort to write to advertisers whenever you wanted any information about apparatus. The returns show that you did your part in fine shape. Our advertisers are enthusiastic over the returns they obtain from the money they spend with us. We have one letter from one of the best known amateur wireless apparatus builders in the country that any magazine would be proud to receive. This is all because of good TEAM PLAY. Keep it up, fellows. Every letter you write and every dollar's worth of material you buy from our QST advertisers helps us build

a bigger and better magazine and strengthen our A. R. R. L. and amateur wireless in general. In the dark days that are to come, when amateur operating will be shut down because of Military Necessity, we shall need QST to hold us together and to do its share in helping our country protect itself. We shall not be able to communicate through the air but we shall be able to communicate with each other through our QST. We shall urge the manufacturers to keep up their advertising notwithstanding the war, because it will be a time when the entire amateur world will study advertising and form their conclusions regarding what they will buy when they fix their sets up. So, make it your business to look carefully through the advertising and write to the advertisers for anything you want to know more about, and don't forget to mention QST.

PRINTING CALLS HEARD

We asked all hands to say what they thought about printing lists of calls that have been heard. We were in doubt about whether it was wanted or not. Well, there is no doubt left. They are wanted. Until we are shut down and no one hears any calls at all we shall go on printing the lists sent in. To save space we shall put them in fine type, and only print those which are some respectable distance away.

We have enough on hand to run a long time, and if we are closed up it will taste good to see the old familiar calls and to note who received them.

There are many queer things developed from the lists of calls heard. It seems that certain calls are never heard in certain localities while they are heard by almost every body twice the distance away. Why is this? Why should stations in the

Eighth and Ninth Districts hear New York stations easily when we in New England never hear them at all, notwithstanding we are three hundred miles nearer? And how is it that a station down in a valley directly under the brow of a 16,000 feet high mountain in the West hears a station 800 miles away on the other side of the mountain. Certainly the waves do not

converge again behind the mountain. They have not the distance available. Do they come through? Or do they "follow the contour," as we have been told in some of the Old Man tales we remember? Some of you chaps who have had instances of this sort of thing write in and tell us what you know.

THE ENLARGED A. R. R. L.

Well, what do you think about the new organization of our A. R. R. L.? To the editorial typewriter it is the finest thing ever put across in amateur wireless. It makes everything QSA very. And it means that AMATEUR WIRELESS in these good old U. S. A. is going to be something very important in the years to come. It is only a passing affair if we are all closed up for the war, because there will be peace after the war, and then things will start again with renewed vigor as a result of the enforced abstinence. It will be like the fall season, only intensified about one hundred fold. We have been in the habit in the past of voluntarily closing up in the summer time. But now we will be enforced to close. That makes a big difference in the desire to reopen. When you can reopen any minute by simply deciding to do so, you are not so crazy to do it; but when you are forbidden to open up, it becomes the one thing in life necessary to a complete happiness.

This pent up desire put on top of the influence which the gentlemen of the A.

R. R. L. Board of Direction will exert is going to put steam back of things for fair, and unless we are up a tree higher than we think we are, the coming season is going to see things done which none of us would have dared dream of a couple of years back. Unless there is the makings of something big in the thing, such men as Mr. Hebert, Mr. Smith, Mr. Gaty, Mr. Hutchison, Mr. Camp, Mr. Stanley, and Mr. Runyon would not give their time and thought. These are all men of affairs, whose time is valuable and who have many interests calling them. When they take a seat on our A. R. R. L. Board it means business. The gentlemen who represent the Central West, Far West, South and New England are also a big asset, even though they do not give their time to attending meetings in New York frequently. They give their time in working and in writing, and that they are willing to do it means much. The old ship is coming along fine, most certainly, and no one can say how big and powerful we may become in the future.

THE COMING SUMMER

This is going to be some summer. Usually when the first of April comes around, we begin to think about the fishing rod, and neglect to put the needed new cells in the B battery. This summer, it is going to be different. In fact, it is already different. Our Trunk Line Managers and our District Superintendent's reports all show that the biggest traffic was handled during March. This never happened before. One of the manufacturers told us the other night, that his business

was bigger this Spring than it was at any time during the Winter. He said that never before had he known interest in wireless to hang on the way it has this year.

The coming Summer will see the first big advent of women into the wireless field. Classes are forming at this writing all over the country, and young and old are working hard learning the code. Practice sets consisting of key and buzzer are being bought faster than the dealers can supply

them. The fair sex are unquestionably on the rampage and heaven only knows where they will fetch up. In any event, they will serve to add still further to the summer interests in wireless. The war conditions and the policing work and the

fact that many amateur stations will be appointed as official naval listening stations, will keep things boiling all the coming summer as they never have boiled in any past summer.

THE A. R. R. L. SPIRIT

Every once in a while one of you fellows writes in a letter and tells about the feeling of intimate acquaintance and friendship which he feels toward everybody concerned in the A. R. R. L. It always warms the cockles of our heart and inspires us. Just why we wireless bugs seem to possess this brotherly feeling to a greater extent than other groups of people, is not entirely plain. Some times we think it is because of the deeper and more abstruse problems which we have to face. We who are closely identified in the study of radio communication are brought very close to the wonders of Nature. The great laws which govern all things and which we must always observe, gives one a very much deeper regard for truth than comes to those who follow only the ordinary matters of life. The fact that we are all troubled with the same things, arouses a feeling of brotherhood. The fact that we appreciate one another's failures and successes, brings us close together. The ro-

mance of sitting alone in a little out of the way room among a lot of instruments, and yet be in communication with congenial spirits in other distant and out of the way little rooms, is conducive to profound and reverent thoughts. The fun which bubbles over from so many of us, and finds expression in QST, is one of the interesting manifestations of the effect of our work upon us.

We used to think that it was possible to feel close to each other when we were seven hundred strong, but that this would disappear when we grew large. The personal element would not stand the stretching. But this is not the case. We seem to be just as close together at seven thousand strong, as we were when we were only seven hundred, and if we can maintain it among seventy thousand. Anyway, here's hoping we may be privileged to go on in the happy and pleasant paths we have trodden in the past.

STATEMENT

of the ownership, management, etc., required by the Act of August 24, 1912, of QST, published monthly at Hartford, Conn., for April 1, 1917.
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CLARENCE D. TUSKA, Manager.

Sworn to and subscribed before me this 23rd day of March, 1917.

CECIL POWELL,
Notary Public.

WHO'S WHO IN AMATEUR WIRELESS

We shall publish each month two pictures of amateurs who have become known by call letters. This will draw us all closer together. We are often curious as to just what the other fellow looks like, and here's our chance to see.—Editor



J. O. SMITH
2ZL

This month we have with us the Manager of the Atlantic Division, J. O. Smith of Valley Stream, L. I. Mr. Smith has worked hard for our relay routes. Most of the amateurs in the east already know him, while those in the west have heard his spark. Up to the closing of stations, Mr. Smith had the Atlantic Division in fine shape. In this rather serious time, he needs your help and suggestions as much as ever. Let's all lend him our hand.



O. M. HEACOCK
7ZH

Mr. Heacock is one of the western enthusiasts, formerly of LaGrande, Ore., but now of Enterprise in the same state. In many of our relays, Mr. Heacock has been the connecting link between 7ZC, 7YS, and 7JD. Not a few throughout the west have heard him operating. We shall all be pleased now to meet him. We hope the temporary closing of stations will not dampen the enthusiasm at 7ZH.

Reports of Division Managers

This is the best set of Reports we have received. They show enthusiasm and hard work. It may be the last operating report for sometime. In its place let's hear from the "boys" in the service.—Editor

ATLANTIC DIVISION

Mr. J. O. Smith, Manager, Valley Stream,
Long Island.

The great tide of human progress has again carried us into war, after nineteen years of peaceful pursuit. The country has done much in those nineteen years, has moved irresistably forward in all branches of its pursuits, and not the least of these is that of the science of radio communication.

In the stirring days of '98, with Sampson, Dewey, Schley and Roosevelt's Rough Riders, radio may not have been unknown, but it certainly was not developed. There were precious few radio professionals and no amateurs.

What a difference today! Upon the declaration of war on April 6th, when the Government set about the task of closing amateur and commercial stations for which no place could be found in its service, the number reached up into the thousands.

Almost all of this development of amateur stations had taken place in the last five years, but the greatest strides amateur radio has ever seen were made in the last few months, when the epoch making trans-continental amateur relays were successfully handled.

This transcontinental work has been the dream of many amateurs for years and the successful accomplishment of this greatest of all amateur undertakings has given many of us complete and lasting satisfaction.

An examination of the records of some of our stations for March certainly leads anyone to wonder how much further we could go with our relay work. About a year ago a well-known station in the First District was given special mention in QST through having handled 400 messages during the season. This year one of the Second District stations handled 502 messages during the past month alone. The remarkable part is that all this was voluntary service, based on pure enthusiasm for and loyalty to the science of organized radio communication.

We have accomplished much—whether we will be permitted to accomplish more in time to come is beyond our knowledge or control.

At the time our stations were closed by the Government, the trunk lines in the Atlantic Division were in better shape than they have been since first organized. For the first time in the history of the League, it was possible to handle traffic between New York and Boston in a prompt and dependable manner.

The new Philadelphia-New York line, too, had just become an important factor in Southern traffic and a month more would have seen traffic going from Boston to Cleveland, via Brooklyn, Trenton, Philadelphia, Wilkes-Barre, Buffalo and Erie, in short dependable jumps, irrespective of seasons.

The method of handling traffic in short jumps, through almost any conditions, had proved to be entirely successful.

The reorganization of Trunk Line C had proceeded as far as shown below at the time all stations were closed:

Tufts College, Mass.	1ISD
Lexington, Mass.	1ZD
Newton, Mass.	1PM
Burlington, Mass.	1EIT
Hudson, Mass.	1LR
Marlboro, Mass.	1EAW
Worcester, Mass.	1ZW
Worcester, Mass.	1YK
Springfield, Mass.	1ZS
Springfield, Mass.	1MO
Hartford, Conn.	1ZM
Hartford, Conn.	1ZT
Meriden, Conn.	1ABO
Bridgeport, Conn.	1DK
Bridgeport, Conn.	1ESR
Bay Shore, L. I.	2RL
Babylon, L. I.	2FS
Freeport, L. I.	2OE
Valley Stream, L. I.	2ZL
Brooklyn, N. Y.	2BO
Brooklyn, N. Y.	2CV
Stapleton, S. I.	2AEC
Keyport, N. J.	2AKK
Highland Park, N. J.	2ALI
Trenton, N. J.	3VG
Trenton, N. J.	3NG
Abington, Pa.	3AFA
Philadelphia, Pa.	3AEP
Philadelphia, Pa.	3AZ
Philadelphia, Pa.	3ED
Philadelphia, Pa.	3EP
Philadelphia, Pa.	3TQ
Philadelphia, Pa.	3XJ
Lancaster, Pa.	3PC
York, Pa.	3TD
Baltimore, Md.	3AK
Baltimore, Md.	3SV
Baltimore, Md.	3ATR
Washington, D. C.	3CK
Washington, D. C.	3GB
Washington, D. C.	3ZW

Following will be found the reports of the District Superintendents so far appointed in the Atlantic Division. The writer will appoint others later, and should like to have suggestions for the States of Maine, New Hampshire and Vermont.

DISTRICT OF MASSACHUSETTS

Mr. Guy R. Entwistle, Superintendent,
Tufts College, Mass.

Good progress has been made on the trunk line development in this district, and the route to the Second District has been working in fine shape for some time. The policy of short jumps in the regular relay work has resulted in regular and efficient service, and the improvement over former methods is apparent to all. It is a great satisfaction to know that the problem of handling traffic between Boston and New York has been successfully overcome and is a stimulus to more effort to open up the lines to the north.

Duplicate stations have been assigned in the new line to the Second District to insure prompt handling of traffic. This has worked out very well in practise and the writer intends to follow this method of assigning stations wherever possible.

1ZF has joined the naval reserve as first class radio electrician.

Worcester Polytechnic, (1YK) has recently been enrolled into active service. Three afternoons and evenings (5 P. M. and after 10 P. M.) Tuesday, Thursday and Friday. This permitted an afternoon relay as far as 1ZM at least.

1PM has also signed up in the naval reserve.

Concerning the number of messages handled, a request was sent to the various stations but few answers were received. However,, 1ATR handled 42, 1ZW had about 15 at the time the stations were closed, and 1ISD handled 10.

DISTRICT OF CONNECTICUT.

Ninety-seven messages were handled by 1ZM during the month of March, 1917. Mr. Maxim reports that the line between Hartford and New York is working very well, and this is due to 1ABO and 1DK principally.

It is also pointed out that conditions promise great improvement to the east, but that traffic is very slow in being cleared to points around Providence. Several Trans-atlantic messages for points in Maine have passed through this station lately, and have given satisfaction to all concerned.

DISTRICT OF EASTERN NEW YORK.

Mr. C. R. Runyon, Superintendent, Yonkers, N. Y.

This district of the Atlantic Division is a new one, consequently there is little to report. The Hudson River line from New York to Albany, working under the League's short jump principle, has been doing good work. About sixty messages have gone over this route in daylight and during bad weather conditions and it is reasonable to suppose that from now on service will be continuous the year 'round. The line-up is as follows:

New York City	2PM
Yonkers	2ZS, 2AAU
Peekskill	2CE
Poughkeepsie	2DA, 2AR
Albany	2AGJ

The proper distribution of messages in New York City is still a problem because of the difficulty of getting stations to adopt a regular schedule and stick to it. It has been necessary this season to mail 90% of the through New York traffic when within only a few miles of its destination and much thanks is due John Grinan 2PM, and J. O. Smith 2ZL, who used this method to insure the delivery of long distance messages.

2BW in the Bronx and 2AFN in White Plains are doing good work in the distribution of messages and have handled a lot of business during the month.

Operators in this district, which, excepting Long Island and Staten Island, includes all Eastern New York, are urged to send suggestions and monthly station reports to the writer. They will all be gratefully received.

2ZS handled 502 messages during March, and outside of the Second District worked with 1ZM, 1IZ, 1ASE, 1DK, 3WN, 3NB, 3PC, 8ALE, 8NH, 9PI and 9PC.

The handling of 502 messages in one month by this station sets a high water mark that will undoubtedly stand for a long time. It means an average of 16 and a fraction messages per day, and if anyone is going to beat it the writer predicts that he will have to adopt amateur radio as a business, using his business as a recreation.
—Division Manager.

Messrs Faraon & Grinan report that very reliable communication was established with 9PC during March nights when they could hear but very few distant stations, 9PC was easily readable and on the job every night.

During the month 2PM station handled a total of 331 messages, worked with (not heard) the following: 1DK, 1IZ, 1PM, 2AGJ, 3UF, 3AK, 3AEP, 3XJ, 3ATR, 3NB, 3WN, 8NH, 8XE, 8JZ, 8ED, 8ALE, 9DK, 9NN, 9PC, 9NW, 9AFE, 9XM, 9PF and 9WW.

Mr. Winn's station, at Poughkeepsie, 2DA handled 90 messages during the month. This station is a very important link in the chain of stations along the Hudson, between New York and Albany, and has done very reliable and efficient work for some time.

During March 2AGJ station handled 350 message (not counting local); fifty of them were handled in one night and several nights thirty. One night 25 were sent to 9PI and another night 15, and 20 were sent 8ED one night also. To show that the Pacific Coast stuff is getting through, the station handled 15 from the Coast last month.

At the time the stations were closed Mr. Hewitt was trying to work up a station in Plattsburg, N. Y., about 200 miles north of Albany. This station is close to Vermont and ought to open up that state from the West. Three good stations have been developed in Cobleskill, N. Y., about 45 miles West of Albany and another in Cooperstown, about 90 miles West. With 8WO, (Binghamton), on the West about 60 miles or so away, this would open up a route into Binghamton. Also a station signing 8MC, New Berlin, N. Y., is heard often in the early evening and could perhaps help this line.

From March 1st to March 31st., 1DK station handled 81 msgs which is 21 msgs more in one month than handled in the two previous months.

DISTRICT OF BROOKLYN AND STATEN ISLAND.

Mr. M. A. McIntire, Superintendent, Brooklyn, N. Y.

This month has been a booming one for Relay work in this section of the State. More messages have been handled and more station owners interested than ever before. We have organized an efficient delivery system in Brooklyn whereby messages are delivered on almost a 24 hour basis. Mr. John Dunham, 2ACV has helped out considerable in this, having considerable time to devote to it and also having an automobile at his disposal by which traffic is being handled in all parts of the City, where stations are not located. Mr. Dunham delivered ten such messages during the month, which had not been for him would have been delayed for quite some time.

We have also organized, through the help of 2AEC of Stapleton S. I., 2AKK Keyport, N. J., and 2ALI of Highland Park, N. J., and efficient Trunk Line for southern traffic. 2ALI is in easy working range of Trenton, N. J., who can handle things going further south. The QRM between Brooklyn and Keyport or Highland Park, N. J. is usually pretty strong, there being a number of 1 K. W. stations in this vicinity, but this is being overcome by 2AEC at Stapleton, S. I. He is easily readable at 2BO at all times and work is being done on this short relay. There are a number of stations who are doing good work both in Brooklyn and Staten Island who are not members of the League; but we hope to persuade them in a short time that the A. R. R. L. way is the only way in which to get real work done.

During March 2BO station sent 106 messages and received 92, a total of 198.

During March 2AEC, Richard Kleinberger, Stapleton, N. Y., received 10 and sent 14 a total of 24.

Station 2ACV, Brooklyn, J. Dunham, sent 28 messages and received 48, a total of 76.

DISTRICT OF NEW JERSEY.

Mr. Lester Spangenberg, Superintendent, Lakeview, N. J.

During the month of March the relay traffic in this district far exceeded any previous month, and the way the situation was handled by those interested shows that we are all working together to make the A. R. R. L. a big success.

There are a number of stations in this district which have, and are, doing their best to accomplish this.

At this time I am unable to give the total number of messages handled per station. It is my intention for the following months to have this information ready for publication as far as possible, and stations handling traffic will please drop me a line not later than the first of the month, giving me this information.

Up until a short while ago 3WN, Mr. Gaty and sons of Morristown, New Jersey, were handling most of the traffic enroute to Philadelphia, Atlantic City and points south, conditions being such that they were kept on the jump, but since the new line from 2ZL via 2BO Brooklyn, 2AKK Keyport, New Jersey, 2ALI New Brunswick, N. J., 3VG and 3NG at Trenton, N. J., etc. to Philadelphia has been open, they have been somewhat relieved.

At the time of this writing, the exact number handled at 3WN station is not known, but is undoubtedly large.

The new line to Philadelphia, through the efforts of those mentioned, is working very satisfactorily.

Other stations that are doing good work are as follows:

2BD—Theo. C. Banta, Ridgewood, N. J., has handled traffic for Ridgewood, Midland Park and vicinity.

2ZM, 2NN and 2BG take care of traffic for Paterson, N. J.

2EX—B. B. Jackson, of Rutherford, N. J., has proven to be a great help in handling traffic in his vicinity and at times gets in on the long distance work.

2CB—H. L. Leeb and 2GM—A. W. Moss, of South Orange, N. J., have been very active taking care of traffic around Newark, the Oranges, and also the long distance work.

2IP—Wm. E. Ashmall, Arlington, N. J., handles traffic for Bloomfield, N. J., and vicinity.

Mr. E. W. Maurer, 2AKK station during March sent 17 and received 23, a total of 40.

DISTRICT OF PENNSYLVANIA, MARYLAND AND DELAWARE.

Mr. Chas. A. Service, Jr., Superintendent, Bala, Pa.

Since I took hold of the relay work in this district my one idea has been the development of short distance relays and a complete system of Branch Lines, so as to form a network of stations that will make it possible to reach practically every part of the country within the district during any time of the year, winter or summer, good or bad weather. This has been made easier than might at first be expected for two reasons: First, the presence of good, reliable relay stations in practically every town and city, and second, the ready and willing cooperation of their owners. This cooperation has not been by spirit alone, but by actual work. Almost without exception, the stations I have gotten in touch with have shown all kinds of enthusiasm and have entered into the spirit of the work in a way which has brought success. There is no doubt that the idea of short distance relays has created an added stimulus to the smaller stations to get into the work and there is today more messages traffic being handled in this district than ever before, not by means of relays over long distances, but from stations thirty to forty miles apart.

With Philadelphia as a center, relay routes have been placed on a systematic basis in three directions, (1) toward N. Y., (2) to Western Penna. and (3) to Baltimore and the Southern District, so that messages can be depended on to go over these routes within two or three days at the most. It will be seen these routes are parts of or along the general line of the main routes, joining Route "C" at Trenton on the North and Washington on the South and joining Route "D" running through Western Pennsylvania. The main object has been to get the relay stations in the Eastern part of Pennsylvania, through which

the majority of southbound traffic passes, organized into systematic routes which can connect with the North and South, leaving the more distant or outlying portions of Pennsylvania, Delaware and Maryland to be connected with later. With an efficient central system the spread of the routes will take place naturally.

This last month, in addition to the work of our regular relay stations, has seen the development of new first-class relay stations, whose work has been steady and regular because of the ability of their operators and their frequent hours at the key. Among those who have come to my personal notice are 3AZ, Gillingham, and 3XJ, St. Josephs College, both of Philadelphia; 3NG Raser, Trenton, N. J.; 3PC Bowman, Lancaster, Pa.; 3PY Bergey, Lansdale, Pa.; and 3AK, Duvall & Smith, 3SV King and 3ATR Falconer all of Baltimore, Md. These stations are comparatively new to systematic relay work, but are certainly deserving of a great deal of credit. Besides these fellows there are hosts of others who have been doing good work all winter and are well known to most of us as the old standbys in an emergency. It is impossible to keep in touch with all of them or to know them all unless they write and give some idea of the amount of work they are doing, which I can't urge them too strongly to do, as it will bring them to my notice and help to show where the best work is being done. Among those who have figured in relay work for the past two months are: 3AFA, 3AEP, 3AZ, 3ED, 3EP, 3TQ, 3XC, 3XJ; to 3QD, 3RM, 3TD, 3AUC, 3MS, 3PB, 3FR, 8XE, 8LN and many others whom I have not yet been able to get in touch with or have heard about.

The routes that have been put in regular working order are listed below. As will be seen, they run to points joining routes from districts outside my jurisdiction which have been developed by other District Superintendents. Most of these stations can skip over the heads of the neighboring stations in good weather, but will have to depend on them during unfavorable conditions.

I. Phila. to Pittsburgh; Phila., 3AEP, 3AZ, 3ED, 3EP, 3TQ, 3XC or 3XJ; Bala, Pa., 3QZ; St. Davids, Pa., 3ZS; Norristown, Pa., 3FK; Lansdale, Pa., 3PY; Reading, Pa.,

3QD, 3RM; Lancaster, Pa., 3PC; York, Pa., 3TD; Carlisle, Pa., 3AUC or Harrisburg, Pa., 3MS or 3PB; State College, Pa., 8XE; (?) Pittsburgh.

II. Phila. to Wilkes-Barre connecting with route from W-B to Buffalo; Phila., 3AEP, 3AZ, 3ED, 3EP, 3TQ, 3XC and 3XJ; Lansdale, Pa., 3PY; Emans, Pa., 3AI; Lehigh, Pa., 8LN; Wilkes-Barre, Pa., 8ZS.

III. Phila. to Trenton, N. J., connecting with N. Y.; Phila. 3AEP, 3AZ, 3ED, 3EP, 3TQ, 3XJ; Abington, Pa., 3AFA; Trenton, N. J., 3NG or 3VG.

IV. Phila. to Washington, connecting with the South Atlantic States; Phila. 3AEP 3AZ, 3ED, 3EP, 3TQ, 3ZC, 3XJ; to Lancaster via route I; Lancaster, Pa., 3PC; York, Pa., 3TD; Baltimore, Md., 3AK, 3SV, 3ATR; Washington, 3CK, 3ZW or 3GB.

It was hoped that a route to Atlantic City from Philadelphia could be put in working order before this report was due, but conditions along the South Jersey Coast are very unsatisfactory for relay work, as there seem to be long gaps or else no regular hours at the majority of stations. Until more stations can be utilized between the Coast and Philadelphia relay traffic will be uncertain at best.

In conclusion, a few words might be said in regard to the effect of the declaration of war on amateur wireless. It is very generally expected that the government will close all or most amateur stations, possibly permitting a very few to remain in working order and assigning them to some definite reserve duty. While such action will bring relay work to an immediate standstill it need not be feared that our organization or efforts have gone for nothing, as we know that those who have taken a vital interest and been actually engaged in relay work realize they have gained much practical knowledge which will be of value in case their services are required by the government; they are no longer simply amateurs, but a body of commercial operators with practical experience which can be used to great advantage by their country. If our relay work has done nothing else than this it has surely accomplished a great deal.

DISTRICT OF VIRGINIA AND DISTRICT OF COLUMBIA.

Mr. Wm. T. Gravely, Superintendent, Danville, Va.

I will not attempt any official report for the month of March, but will make it an informal affair, instead. With only five or six stations to account for there isn't very much I can say, except that progress is being made. As yet I have not been able to do anything with Richmond, but if everything works out as I have planned we are going to have a good one there next season. We cannot hope to work route C satisfactorily until stations have been linked up closer together, and I shall certainly keep behind the fellows in this territory.

More second district stations were heard here during March than in any other month this season, and also 1st District Stations, but the 8th and 9th hold just about the same.

Since 8AEZ has almost quit us, 9PC seems to be about the best that comes in here, excepting the X's, Y's and Z's, with 9ABD and several others close seconds. 9PC must have splendid carrying qualities, as I have heard many extreme distant points calling him.

Had 1DK on the other night, but he was too faint, could not work him. Also had 9PC on the same night, and he reported 3RO very QSA, but as he had several messages waiting asked me to QRX. It was my intention to shove several Southern messages through him later on in the night, but a little later I raised 4AA. However, I could not work him—too much QRM, and QRN, also. 9PC kept busy so did not disturb him anymore.

DISTRICT OF WESTERN NEW YORK.

Mr. Wm. T. Fraser, Superintendent, Buffalo, N. Y.

I am working hard to establish a route East from Buffalo, and with the help of G. W. Finegan (8ASH) and J. G. Case (8VF) of Rochester, L. A. Taylor (8AJE) Geneva, Joel Young (8ALK) Elmira, Bush Bros. (8WO) Binghamton, J. H. Stenger, Jr., (8ZS) Wilkes Barre, and A. N. Hudson (8FL) of Fulton, who are cooperating, the route will soon be perfect.

The Western route has good promises. I have received letters that show much enthusiasm in that direction. J. H. Clarke (8SQ) of Dunkirk, N. Y., is adding a regenerative set as shown in the December number of QST. In Erie, Pa., business will be handled by the Summit Radio Club of Erie. The officers are: Harry Fitzgerald, President; Waid Hopkins, Secretary-Treasurer; Norbert Nuber, Chief Operator.

On the proposed line to Pittsburgh, I wrote several letters, but as yet have had no answers. I would like to hear from the operators of the stations on the Buffalo-

Pittsburgh route who would like to handle that business.

8VX did not handle many messages in March on account of QRN which is growing worse as summer approaches. I kept watch until 2 o'clock one morning. The QRN was gradually decreasing, and when my son came on at 5 a. m. it had disappeared. He started to call a Philadelphia station which he heard strong, when our motor stopped. Early morning work, while it is quite a task for some of us to leave our beds, seems to be the solution of clearing up the business on hand, as QRN and QRM are nil.

CENTRAL DISTRICT

R. H. G. Mathews, Manager

As we come to the end of what has been the busiest and most satisfactory season for amateur wireless work that we have ever seen, a prophesy of what we may expect during the next season is in order. Since we have three stations which have succeeded in working with both the Atlantic and Pacific Coasts, 9ALM, 9ZN and 9ZF, it is only logical to foresee that messages will be handled regularly from the Atlantic to the Pacific with one relay only. Messages have been sent 2AGU, 9ZN, 9ZF, 6EA this winter, thus using only two relay stations, and we feel that transmission either direct, or by means of one relay will be an accomplished fact next winter.

We wish to announce that because of the pressure of other business, our assistant, Mr. Shotwell, has been unable to retain his position, and has resigned. We have appointed Mr. L. E. Dutton, 9ALM, of Chicago, as our assistant, in his place.

Owing to the reorganization of the A. R. R. L., our territory has been somewhat changed, and consists of the following states: Ohio, Michigan, West Virginia, Kentucky, Indiana, Illinois, Wisconsin, Missouri, Kansas, Nebraska, Iowa, Minnesota, North Dakota, South Dakota.

We have appointed Mrs. Chas. Candler, of 8NH, as District Superintendent of the states of Ohio and West Virginia; Mr. A. I. Graham and Mr. G. E. Wilson, of 9ZK and 9EP, respectively, as joint District

Superintendents of the states of Missouri and Kansas; Prof. A. H. Taylor, of 9XN as District Superintendent of North and South Dakota; Mr. Jas. M. Sommer, of 9JI, as District Superintendent of Indiana and Kentucky; Mr. D. R. Lewis, of 9ZI, as District Superintendent of Iowa and Nebraska and Mr. H. Burhop, of 9RW, as District Superintendent of Wisconsin and Minnesota with 9VH as his assistant. The states of Michigan and Illinois will be taken care of by my assistant, Mr. Dutton, of 9ALM.

Branch routes will be organized by these Superintendents, for their states, and all applicants for positions on such routes should apply to them, upon which their appointments will be ratified by me.

The present system of Routes A, E. and G, and the stations now on them as Trunk Line stations will not be changed in any way, insofar as my territory is concerned, but an attempt will be made to fill in stations at distances of fifty miles, between the present Trunk Line stations. This presents an opportunity for those who have thought themselves neglected, to obtain a Trunk Line appointment. Applications for Trunk Line positions between present stations, as listed in the report for Routes A, E, and G, in April "QST" should be made directly to me, and not through the District Superintendents, but applications for Branch route appointments should be

made to the proper District Superintendent. We will need a host of new stations, at once, and we therefore invite applications.

The amount of message work handled during the season by our routes has been something to make us sit up and take notice.

2AGJ has handled as many as fifty messages in one evening and at 9ZN, thirty have not been unusual. We presume the same condition obtains at the other stations. A total of 552 messages have been handled at 9ZN from Oct. 1st to April 1st. We would like to have reports on the amount handled by our other stations for publication in next QST.

At present, little work is being done because of the crisis now upon us, but we cannot believe that our country can remain long in battle without emerging victorious, and we therefore look forward to a big radio season next winter.

April 7, 1917.

Dear Mr. Maxim;

I am enclosing two reports which just arrived. To show what hustlers we have, one report is that of my new Dist. Supts. at Kansas City, Mr. Graham and Mr. Wilson. Please put their report in "QST" with mine.

I have been appointed Naval Radio Censor at Grand Haven and Benton Harbor, (I hold a rank of Radio Gunner in the reserve) and am leaving tomorrow, together with 9ALM, 9OX, 9VY, 9GY, 9NN and more of our long distance friends, who are to serve as operators under me. Please address future mail to me care of Marconi Wireless station, Grand Haven, Mich.

Respectfully,

R. H. G. MATHEWS, "9ZN"

[Mr. Mathews has been appointed Naval Radio Censor at Grand Haven and Benton Harbor. He with operators of 9ALM, 9OX, 9VY, 9GY, 9NN and other long distance friends have left for duty. Mr. Mathews holds the rank of Radio Gunner in the Reserve. Mailing address care of Marconi Wireless Station, Grand Haven, Mich.

With a feeling of pride we watch our membership join the ranks. The worth of the American amateurs is being proven. We want every reader in the service to write his experiences to QST as far as censorship will allow.—Editor]

REPORT FOR MISSOURI AND KANSAS

A. I. Graham and G. E. Wilson, District Superintendents.

Although detailed plans for this district have not been formed, we shall briefly state our intentions which we trust will meet with the approval of all. Trunk Line G will remain unchanged and we urge everyone having trans-continental messages to take advantage of this route as 9ABD, 9EP, 9LO and 9ZK can successfully work East and West. In accordance with the policy of the League, we shall aim to make use of many stations by creating branch lines to near-cities. There will probably be branch lines from Jefferson City (9ABD), Kansas City (9EP, 9ZK, 9LO), and Wichita (9JW). In this manner, we hope to establish lines which entirely cover the district. At the present time we are especially desirous of running a line into Western Kansas and all amateurs West of Topeka who would like to be on this line are requested to send in their names and a list of stations with which they work.

Perhaps it would not be out of place at this time to mention some of the work being done by stations in this district. Especially good work has been done by Mr. W. P. Corwin, 9ABD, who has covered more ground and handled more traffic than any other relay station. Others who have taken active part are: 9JW, 9DM, 9LO, 9EP, 9ZK, 9PF, 9HU, 9GJ, 9UK, 9HS, 9LQ, 9NN, 9LR, 9VP, 9HN, 9HX and 9ABM.

Several of the above stations have exceptional ranges and have been heard at the four extremities of the United States in addition to having been picked up by ship-stations.

Any information which will improve relaying will be gratefully received and we would appreciate suggestions from the various amateurs in this district. Communications should be addressed G. E. Wilson, 9EP, 3922 Flora Ave., or A. I. Graham, 9ZK (old 9MQ), 3033 Park Ave., Kansas City, Mo.

In the event of closing amateur stations, there are a great many ways we can still keep our interest alive, principally by improving our sets, the looks of our stations, reading QST and articles which would give us a better technical knowledge of radio.

PACIFIC DIVISION

Seefred Bros., Dist. Managers.

During the past month the traffic on Trunk Lines "B" and "F" has materially increased, we having handled about 250 messages besides keeping up our regular tests when no messages were to be sent. If, in any direction no one seemed to be in, the message was broadcasted and there were always several who QSL'ed by mail later. Due to QRM, the long distance work has to be done late at night. Mr. Schoolboy is required to be in bed, so he must be excused if he does not make much of a record. We have made it a point to deliver messages received late at night, to relayers the next day to send on to the place addressed.

Most of the messages handled were between 6EA and 9ZF. This was direct communication, and he reports by letter that it was like reading one across the street.

This will be our last report of this kind, as with this issue we resign the managership in which we have served during the past year, feeling we have done a fair share of the League's work. We thank you all for your kind interest and co-operation in the work accomplished and hope you will still remember us by radio.

REPORT OF RADIO STATION 8AIR MONTH OF MARCH

During the month of March this station received a total of Thirty-five (35) messages and sent a total of Twenty (20) messages, working with stations 2AGJ, 3PC, 8KF, 8NH, 8QK, 8ZL, 8XA, 8AAK, 9PC, 9XM, in the relaying of messages.

List of Stations Over 125 miles copied at station 8AIR during the month of March: 1ZM, 1ZV, 2PM, 2AGJ, 3PC, 3NB, 3UF, 5DU, 5BV, 5ZM, 8QB, 8AFW, 8NQ, 8ALE, 8KF, 8JZ, 8QK, 8ARN, 8LE, 8YI, 8NH, 8AEZ, 8YL, 8VX, 8ZJ, 9VY, 9PC, 9RD, 9LR, 9ZN, 9XM, 9XE.

TRUNK LINE "F"

Rev. S. Ruth (7YS) of Lacey, Wash.,
Assistant Manager.

Although not a single test message has been received by 7YS during the month of March over fifteen messages have been handled from the South, East, and North. The College owns a private power plant and this shuts down at ten, after which time no practical work can be done. Arrangements however, have been made and the Foreman of the plant "bribed" to furnish juice a little longer on Thursday evenings. On those nights the station will be ready to handle relays until 11:00 P. M.

The Trans-Continental Relay from the Mayor of New York to the Mayors of Los Angeles and Seattle reached its northerly destination through 7YS. The message was sent to 7YS by 7ZH our former old stand-by of La Grande, now at Enterprise, Ore., and relayed direct to Seattle, Wash., via 7PV who personally delivered the msg to the Mayor of that city, and sent a return message to Mayor Mitchell thru 7YS, 7ZH, etc. A little private trans-continental work started by 7YS resulted in the carrying of "Greetings from the extreme Northwest" to Hiram Percy Maxim of Hartford, Conn., to which a return message was received by 7YS a few days later.

I wish to thank the various stations that pushed this message along.

A peculiarity of this northern Pacific coast, that is becoming daily more apparent is the fact that wireless waves seem to travel much more easily towards the north than towards the south. This is experienced by the Seattle, Tacoma, Olympia and Vancouver stations.

On the other hand the sending of the northwest stations seem to travel better in an easterly direction. If the northwestern stations would thunder in as loudly in the south as those of that section come in up here there would be nothing to it at all. 6BY, 6KU, 6WC, 6AV, 6KJ and 6AC sometimes come in as loudly and clearly as KPH, and KPH isn't very quiet by any means.

During the month 7LV of Tacoma, and 7PV of Seattle have entered the relay route and are now ready to offer a regular and reliable service to Seattle. We here at 7YS can any night work 7ZH, 7ZR, and 7ZC. 7ZN though heard far south on some nights, is very seldom heard here, but since he can work 7ZH, the route is complete.

Amateurs in Olympia, Tacoma, and our station have picked up 9XN at Grand Forks on several evenings. This makes a receiving distance of approximately 1,350 miles. Short wave regenerative sets are the rule, in Washington and that probably accounts for the receiving records. The time as sent out by KIX of Denver is heard frequently by the College station at nine P. M. (coast time). We would heartily recommend the short wave regenerative set appearing in the December, 1916 QST. The results achieved with this outfit which can be very easily built up, are remarkable.

Station 7YS, St. Martins College, Lacey, Wash., has during March communicated with the following stations: 6XM, 6FT, 7CM, 7DL, 7FF, 7JH, 7LV, 7ZC, 7ZH, 7ZN and 7ZR. And has heard the following almost nightly: 6BY, 6WC, 6KJ, 6AC, 6QM, and 6AV. Others that have been picked up QSA are in the sixth district: 6ATQ, 6AG, 6BJ, 6FM, 6FX, 6GO, 6JZ, 6KL, 6KW, 6NF, 6NL, 6SH, 6SX, 6VQ, 6ZV. In the seventh district; 7BF, 7DN,

7EG, 7ET, 7FM, 7LF, 7VN, and "PK" of Spokane. In the ninth district; KIX, 9XN, and 9ZF.

RECORDS

On March 19, at 12:30 A. M., I heard 9ZF and called him saying "msg," but he did not answer me and later worked 7ZC, at Lewiston, Mont. However, I have received a letter from 6EA, our Western District Mgr., saying that he heard my signals when I called 9ZF. He gave wave length, time etc., so that no mistake was possible.

Regarding my work with 7EG, which I consider the record for actual communicating distance, I will say the following.

On March 24, at about 10:30 P. M. I heard 7EG calling KIX. I was very much surprised inasmuch as I could hear 7EG signals at about six inches from my phones, using one DeForest audion bulb, and a Paragon RA-6 receiver. I immediately went after 7EG, using my 425 meter wave, and after about three attempts was very much gratified to hear him answer me. We then "chewed the rag" for a time, but the hard luck of the whole thing lies in the fact that neither of us had any messages for the other, or we could have made a message transmission record.

I do not know what power 7EG uses, but at 9ZN, I use a 1 K. W. United Wireless Transformer, radiating 9 amperes into the aerial. I was very glad to note that several of my friends, among them 9AAB and 9WW were "on the job" at the time, to verify my work.

"LONG DISTANCE RECORD."

By H. C. Seefred.

WRD (Str. D. G. Scofield) 1,289 miles west of San Francisco enroute to Hong Kong China, again reported on January 25th after midnight. In the month of March, station 6EA has been heard by KDU (Juneau, Alaska) (1,800 miles), 5BV (Little Rock, Arkansas) (1,800 miles), "CV" (Houston, Texas) (1,200 miles), 7ZC (Lewistown, Montana) (1,100 miles), 7EG (Baker, Oregon) (750 miles), and established communication with 9AMT (Denver, Col.) on Sunday, March 11th and have handled 12 messages with him already.

Radio Communications by the Amateurs

LOOK THIS OVER.

I do not intend to burden you with your ever increasing correspondence, but feel that some consideration should be given the articles of A. L. Groves, Brooke, Va., and M. B. West, Lima, O.

I happen to know that Mr. Groves has given his subject a great deal of thought, and will, I am sure, afford the officers of the A. R. R. L. "food for thought," and, a basis upon which to work. With new stations coming on every day it is very essential that some plan of operation be decided upon, and adopted, or else, the time will soon come when relay work will be an impossibility, except at such hours no business man can keep. It is a foregone conclusion—the problem will be worked out, but we might as well start on it right now, and, as before stated, adopt some definite plan. Once the League is in full sway, the routes all mapped out and in good working order, I do not look for any unnecessary QRM. The members of the League can handle this matter by logging offenders, and in ninety-nine cases out of a hundred, when such offender is notified and warned, it won't be repeated. Of course, this will require some hard work in the beginning, but the time will come when we will feel repaid. I won't make any comments on the long distance receiving of Mr. Groves, except to say that he is a past master at the art. However, he has several good things up his "sleeve" that he could give to QST readers if he would.

Mr. West has the knack of "shooting straight from the shoulder" in all of his articles. In the first place, he is a practical man, keeps out of theory and gives us all some "plain English," and that is what the majority of us QST readers want and need. As he said in March number

of QST, all of us indulge in unnecessary calling and unnecessary signaling, signing, etc., and—he included himself, but in justice to the man, I feel that it is incumbent upon me to say that I have never heard any station, commercial or otherwise, who indulges as little as he does, and if we will only follow his example, there will be no further comments on this subject.

There is just one more point that I would like to make, and after that I quit. The League should have regular nights and regular hours for operating, or rather, for real relay work, and every man should be at his post during the period, unless for some good reason he cannot be there, and by the way, flimsy excuses should not be tolerated. It won't be long before route stations will take a real pride in the work, and consider themselves fortunate that they are able to hold their stations on the route. Just let all of us get the idea that if we do not shoulder our share of the work that there are others who will, and I'm thinking some of us will be stepping around.

Personally, I am not in a position to talk much, for route C has never been in operation thru this section, but we are doing the best we can, and are trying, with all our efforts, to furnish the League with a strip of territory which may be counted upon when we do get in shape. Our stations are few and far between, and you may say "lucky fellows," but if you once listened to the QRM from that bunch in the 8th and 9th, you might change "your tune." These fellows can QRM a spark coil sig. right here in the City, and I am not "some Liar," either. Ask 4DI and some others around here."

AN OLD TIMER.

Mr. George T. Droste, 203 E. 202d St., New York City, writes the following interesting letter. Don't miss it.

"With great interest, I have been reading old "VN" recite the old troubles and experiences, and I can appreciate and feel for him. No doubt he takes great pleasure in relating them. Under the caption "amateurs galore," I notice "G. D", which happens to be me. A little further down, he puts "Boeder" on the pan, and from what he says, it is easily seen that he does not have much time for his "old timers" any more while up in the wilds of Massachusetts, or else he would hear "Boeder," because if there is any amateur who has done anything to further the art of amateur distance work, I will venture to say, it is Boeder, or 2JD with his rough open 1 KW gap. He is one of the first and most reliable long distance amateurs we have, and you can listen-in most any time during the small hours of the morning, and he is on the job. I agree with "VN", "mug of FH" and get him to tell some of his experiences. I think they will give VN a run.

As for "JB," I can vouch for the \$10.00 a month consumption, as it used to entertain us at his expense. Listening to a girl operator chewing with "VN" was a nightly pastime, and many a time we swore inwardly for the way they "hogged" the air, because it would not have been proper to fill the air with our feelings.

Keep it up "VN" and tell us what happened to old "DF" when he was on Jerome Avenue, or "DB", (don't remember just what the call was.) At any rate, he used to work the Sound boats with an open gap and 10 k.w. power, until he blew up. Maybe "VN" can tell us about the transformer.

I guess I had better not say any more, but let VN tell it. All I have to say, is, those were the good old days when we could have a four or five cornered talk between Mt. Vernon, Yonkers, Jersey, Bronx, and Manhattan, and no "kids" to furnish the QRM for accompaniment. But, no more."

READS NAA IN WYOMING.

Mr. L. G. VanSlyke, of Hyattville, Wyo. writes. "I am a new one among you, but not so new at the telegraph game, in fact, I believe I am few days older than our friend Irving Vermilya of WCC. I would certainly like to SHAKE with Mr. Vermilya, as his little story carried me back to my boyhood days, when the wire telegraph wasn't what it is today, and the telephone was rather a crude affair.

My real object in writing this letter, is to answer our friend, E. A. Hilborn, who doesn't seem to be getting results, and who is inclined to think the other fellow in stretching it a notch, so to make it good, I want to tell of the results I am getting way out here in the WILDERNESS, thirty miles from a railroad, surrounded by mountains anywhere from 6,000 to 13,000 feet high. I am located directly under Cloud Peak, which towers 13,137 feet, completely shutting me in from the East. The sun manages to peep over some time during the forenoon, but the Fertzian waves certainly manage it some way, as I copy NAA, when he sends press at 8:30 p. m., which is 6:30 here and still daylight. I accomplish this with a type AA crystalloids. I get him at NOON with a single audion, and pick up amateur stations at night over a distance of 800 to 1,000 miles. With an undamped wave outfit, I get OUI, all of the undamped stations in the U. S. any time day or night, Honolulu, and as far south as Darien. WGG comes in so loudly over the undamped, that I can hang up my receivers and read him ten feet away, and also with my aerial switch OPEN.

Now, if you are still alive after reading this and doubt my word, come out and if I fail to demonstrate all of the above, I will pay your expenses for the trip, and take you FISHING, where you can catch one hundred mountain trout in four hours.

A WIRELESS story combined with a FISH story ought to convince any fair thinking man that I am honest. I would suggest trying some sort of a combination ground system, and if that fails, come out to Wyoming."

THE LATCH STRING OUT.

Mr. A. J. Carver, 53 Wecker St., Buffalo, N. Y., writes: "Allow me a little space, please, to extend an invitation to all amateurs travelling this way, to make 8ED their home. We have just been favored, and honored, with a visit from our friend 2JU, who proved to be an interesting source of information. Come again, Cliff, and stay longer.

Let me say that I enjoy your magazine immensely and most especially, the part written by "The Old Man." Keep it up Dad, and hit them all.

Buffalo is coming strong for wireless, with the "poor-little-gink-with-the-quarter-inch-coil" much in prominence.

The following is a list of stations I have copied: 12M, 12F, 12L, 2ABG, 2JU, 2ZK, 3NB, 4AA, 5BV, 5DU, 8ATA, 8HB, 8ARI, 8VF, 8HQ, 8NH, 8VP, 8ZP, 8NQ, 8AEZ, 8ATM, 8QK, 9QK, 9XM, 9XN, 9VY, 9DK. Of course I heard 2PM with his "little coil," and must say he comes in wonderfully.

I use a $\frac{1}{4}$ K.W. Thordarson, 25 cycle transformer. Aerial is 50 feet high, 6 strands, 80 feet long. Ground 12 feet long No. 0000, connected to everything in sight."

"HEARD BY STATION 6EA"

Winter of 1916-17

5ZC, 6AV, 6AGW, "CS", 6DM, 6FD, 6JZ, 6PJ, 6PN, 6SH, 6SI, 6WC, 7BF, 7ZC, 7ZH, 7ZR, 9XN, 9ZN, KDP, KIX, KIY, KJR.

"Communicated by 6EA."

6AC, 6AU, 6AHN, 6BJ, 6BV, 6BY, 6FT, 6HO, 6IB, "JS", 6KU, 6NL, 6PW, 6RG, 6SR, 6WZ, 6ZW, 7ZN, 9AMT, 9ZF, KGH.

6EA has communicated several times with 9ZF and 9AMT at Denver, Colorado, (850 miles) while only using straight gap on quarter KW. power. 6EA hears 9ZF fine when he cuts in his quarter KW.

Between January 14th and March 29th, 6EA and 9ZF has handled 194 messages with each other and 14 messages with 7ZN.

Our bi-weekly test messages broadcasted by 6EA, have been received by 6AP, 6AU, 6AV, 6AAK, 6AHN, 6BY, 6CR, 6FT, 6JZ, 6KU, 6NL, 6OT, 6RA, 6RG, 6SH, 6SI, 6WC, "SAC", 7EG, 7ZN, 9AMT, and 9ZF.

MORE ABOUT SPARK COILS.

Mr. Paul Nachemson, 4410 12th Ave., Brooklyn, N. Y., writes us: "As a reader of QST, I desire to say something concerning QRM control. You have the right idea to scare the "QRMers" into an observance of decency and regard for the right of others, but your one big error is your referring to a certain group of radio amateurs as "spark coil amateurs." It must be taken into consideration that every one hasn't lighting current in his home, or means to enable installing dynamos, etc.

I am a member of a certain Radio Club, and in the By-Laws passed about a month ago, the following is stated:

Whereas all members of this organization are to assist in discouraging interference as far as possible, to use the minimum power and obey Government regulations at all time.

Despite the fact that we all use spark coils, never yet has word come to our ears on account of some infraction of this law. It is our aim to aid amateur radio telegraphy in attaining a position of trust, where in time of national peril, instead of causing us to dismantle our sets, we can offer them and ourselves to our country."

ANY SUGGESTIONS FOR 8AEP?

Mr. Arthur Shedd, Butler, Pa., writes: "By all means do not discontinue printing the list of stations. Here is my list:

1ASE, 2CB, 2VZ, 2ZS, 2IM, 3RS, 3AFA, 3PC, 3NK, 3ATR, 3NB, 3AK, 4BY, 5AM, 5BV, 4CK, 8ATW, 8CL, 8ZP, 8OM, 8NP, 8AGW, 8AJE, 8JL, 8JR, 8KJ, 8LN, 8JQ, 8QP, 8AD, 8ABE, 8PL, 8AOL, 8OT, 8NT, 8ASG, 8AMR, 8IK, 8LT, 9ZN, 9KM, 9XM, 9PH, 9KV, 9AIK, 9NN, 9PC, 9JK, 9ZR, 9LR, 9QY, 9AIM, 9ACM, 9GL, 9KD, 9ALM, 9PI, 9DK, 9PF.

I wish you would let some of the readers of QST explain this:—I can disconnect the ground entirely from my receiving set, and hear some fellows better without the ground. For instance, 8JZ and 2PM come in better with the ground disconnected, while I cannot hear them nearly as well with it connected. There surely must be a ground some place on the set, but where is it? I can hear all the commercials better with the ground disconnected. My set surely isn't that sensitive, but where is the ground?"

ST. LOUIS SITUATION.

Mr. R. E. Bobin, 9PF, St. Louis, Mo., writes: "Often some station will ask me to handle something for 9ABD in Jefferson City, Mo., but strange as it may seem, it is nearly impossible to work with 9ABD, although he has a great range and I often hear very far away stations working with him but cannot hear him at all. I have heard him two or three times this winter but he swings so badly that it is almost impossible to read him. It is one of the many freaks of wireless. The same is true of 9GY in Mattoon, Ill.

I guess many amateurs wonder what is the matter with our receiving in St. Louis. Here is the dope. We have been troubled all winter by a terrible induction buzz which is right on the amateur wave, making it impossible to read amateurs of the usual wave length. 9LR, one of the best known stations in the country, has had to give it up, being unable to work at all thru the buzz.

I also wish to report that on the night of Feb. 21, about twelve thirty, I picked up 3PC, the first "three" station ever heard at 9PF. As he is not listed, I hope "QST" will bring him the news. He was very QSA.

Anybody at a good distance hearing 9PF would oblige me greatly if they would drop me a card."

FROM PHILADELPHIA. PA.

Mr. Maurice H. Mandelkern, Philadelphia, Pa., writes: "QST is great. Cannot wait for it to come. Here is a list of stations heard by me, using the pickle and short wave tapless and sliderless pancake tuner. Some of the stations are over one thousand miles distant:

1ZM, 1ZL, 1ZD, 1IZ, 1NN, 1RX, 1ATF, 1DK, 2AGJ, 2LK, 2JD, 2JU, 2CB, 2CE, 2ABY, 2ZV, 2ZP, 2IM, 2PY, 2AUG, 2ZS, 2PM, 2ZK, 2IF, 2ABU, 2AAN, 2IB, 2ALI, 2WB, 3WN, 3AI, 3ATR, 3NB, 3PC, 3ZW, 3RS, 3RW, 3WM, 3SZ, 4AA, 4DI, 4CK, 5ZM, 5BV, 5ED, 5CN, 5AEM, 5AVM, 5CE, 5AHN, 5ABE, 5ZE, 5RS, 5YO, 5ZP, 5AEZ, 5AAK, 5AWA, 5VP, 5NQ, 5QK, 5QX, 5YL, 5JA, 5OT, 5JY, 5JZ, 5ALE, 5CO, 5CL, 5CX, 5VX, 5AVI, 5XA, 5AEH, 5KS, 5ASG, 5NH, 5ADE, 5YI, 5IS, 5ZW, 5AIH, 5QD, 5PA, 5ZX, 5EG, 5AIM, 5ABE, 5HJ, 5LE, 5AMG, 5VY, 5NF, 5AIR, 5QB, 5ZJ, 5PC, 5VY, 5WG, 5EG, 5ACM, 5IK, 5DM, 5MQ, 5GE, 5GY, 5ZN, 5XM, 5ABD, 5AIM, 5ANO, 5QY, 5JI, 5PI, 5QR, 5LR, 5NN."

FROM "80Q"

R. J. Nichols, Midland, Mich., sends the following list of stations:

1ZL, 1ZD, 1ZM, 1EC, 1VN, 1LW, 2LK, 2AGJ, 2DA, 5DU, 5BV, 5ZC, 8KI, 8TC, 8OT, 8ACD, 8NH, 8AEZ, 8CO, 8NF, 8CX, 8JA, 8XA, 8YO, 8YL, 8DZ, 8AJ, 8CS, 8AAK, 8OM, 8ALN, 8ARH, 8ADV, 8AFR, 8RE, 8CL, 8BC, 8US, 8DI, 8KS, 9IK, 9SP, 9PC, 9WF, 9CF, 9NN, 9AR, 9DB, 9ACM, 9XM, 9XN, 9ADW, 8ACD, 8OT, 9FQ, 9DD.

On the night of Feb. 3d, shortly after 1.30 a. m., the signals of 2ABG were recorded. Used two-step Multi-Audi-Fone in conjunction with the audion receiving set. The signals were readable over seventy-five feet from the horn. We wish to congratulate 2AGJ. All of the stations mentioned are strong and easily readable under ordinary conditions, at all times.

HEARD AT STATION 5AB.

4AA, 4ED, 5AH, 5BU, 5ZD, 5DV, 5ED, 5CQ, 5DA, 5AA, 5BB, 5EF, 5ZC, 5DU, 5ZM, 5BV, 5BT, 5DK, 5AX, 5YG, 5DM, 5YM, 5NL, 5NH, 5AEZ, 5XE, 5ASG, 5YL, 5YI, 5YW, 5AA, 5DN, 5GF, 5LR, 5RD, 5TZ, 5ABD, 5AM, 5ZF, 5GY, 5ZD, 5AB, 5KN, 5YO, 5YG, 5YA, 5YI, 5SU, 5AL, 5DV, 5EH, 5QJ, 5AMT, 5IM, 5SK, 5DU, 5HS, 5ABU, 5EP, 5FF, 5AIM, 5CP, 5DM, 5AD, 5AMI, 5XV, 5NP, 5DY, 5EG, 5MY, 5WG, 5GJ, 5AIF, 5ZL, 5AKP, 5IY, 5AAN, 5WO, 5YM, 5EM, 5KD, 5ZL, 5PR, 5ME, 5ASG, 5ZN, 5YU, 5PC, 5PF, 5JI, 5ZK, 5BJ, 5HQ, 5VP, 5LQ, 5VP, 5LQ, 5AKP, 5ABW, 5XM, 5WR, 5BN, 5AHW.

HEARD AT 2AGJ, ALBANY, N. Y.

1ZM, 1IZ, 1PM, 1EIT, 1IRP, 1DK, 1ABF, 1ABO, 1LE, 1ATY, 1UF, 1QV, 1EL, 2ZL, 2ZS, 2PM, 2FS, 2DA, 2AVF, 2BO, 2JU, 2ZM, 2GM, 3AEP, 2FS, 2DA, 2CE, 2AVF, 2BO, 2JU, 2ZM, 3AEP, 3UF, 3AK, 3AZ, 3ATR, 3SV, 3XC, 3AMD, 3IJ, 3NT, 3AI, 3NB, 3PC, 4AC, 4CK, 5ZC, CV, 5DU, 5NH, 5JZ, 5AAK, 5ZP, 5ED, 5XA, 5YO, 5VP, 5KF, 5AEH, 5AEZ, 5AKM, 5NF, 5AOF, 5CO, 5YI, 5AFW, 5LJ, 5WO, 5OC, 5FZ, 5LN, 5LP, 5ZN, 5ATR, 5KI, 5AHN, 5AIR, 5LK, 5PK, 5CL, 5YL, 5LE, 5ALE, 5NQ, 5ZN, 5GY, 5PI, 5PC, 5RD, 5EP, 5AU, 5WW, 5ALM, 5NN, 5EG, 5WG, 5ABD, 5AMI, 5LR, 5PF, 5LC, 5KR, 5WF, 5QY, 5ANO, 5VK, 5ACM, 5ST, 5SA, 5ZL, 5LO, 5AEV, 5HN, 5GK, 5QR, 5NW, 5AAB, 5ZL, 5HQ, 5XM, 5VP, 5DK.

HEARD AT 5ALE, GROVE CITY, PA.

1ABF, 1ASE, 1CM, 1DK, 1EC, 1ESL, 1IZ, 1LE, 1RC, 1UJ, 1VN, 1ZD, 1ZF, 1ZL, 1ZM, 1ZS, 1ZW, 2XA, 2YM, 2ZA, 2ZB, 2ZE, 2ZH, 2ZL, 2ZP, 2ZV, 2ARF, 2LA, 2CE, 2ARI, 2FS, 2BM, 2BG, 2CS, 3XC, 3XJ, 3ZS, 3ZW, 3PY, 3KS, 3TV, 3UZ, 3WI, 3WL, 3SX, 3RO, 3EH, 3NG, 3DH, 3AIL, 4AA, 4AM, 4AT, 4BE, 4BC, 4BY, 4CK, 4CY, 4CL, 4CM, 4DG, 4DI, 4DM, 5ZC, 5ZD, 5ZM, 5ZS, 5AM, 5AP, 5AX, 5BC, 5BT, 5BV, 5CO, 5DU, 5EX, 5XE, 5XM, 5XN, 5YI, 5YO, 5YS, 5ZF, 5ZL, 5ZH, 5ZK, 5ZL, 5QR, 5DV, 5SP, 5RG, 5JR, 5KR, 5EM, 5ALM, 5ADJ, 5DB, 5WW, 5JW, 5JH, 5EP, 5KX, 5WS.

FROM 2BO.

Mr. M. A. McIntire 1127 Avenue G. Brooklyn, N. Y., 2BO, sends in the following list of stations:

1ZW, 1ZM, 1ZD, 1ESR, 1DK, 1NN, 1LE, 1ASE, 1ERA, 2AGJ, 2CE, 2DA, 2XS, 3NB, 3ATR, 3WN, 3WM, 3SZ, 3UF, 3AFA, 3UG, 3ATA, 3ZW, 3ZS, 3AN, 4BC, 4AA, 5ZM, 5BC, 8NH, 8AEZ, 8YO, 8YL, 8XA, 8XL, 8ZP, 8KT, 8CS, 8AEH, 8NM, 8VX, 8XE, 8AMT, 8FB, 9PC, 9ZN, 9GY, 9AFE, 9XM, 9XN, 9EL. Guess that's all.

NEW ORLEANS, LA.

Schiele Bros. 5FB, of New Orleans, La. writes: The following stations were heard with a galena detector. 9ABD, 9NN, 9GY, 8JZ, 8NH, 8AEZ, 5ED. Also heard 5BV but at an earlier date. Many others were heard, but their signals were too faint to be read.

5BU AT DALLAS.

Mr. B. Emerson, of Dallas, Tex., 5DU, sends in the following list:

5AA, 5ZM, 5YG, 5BB, 5BV, 8PA, 8AEZ, 9ABD, 9GY, 9JW, 9QL, 9MQ, 9ZF, 9AHO, 9YJ, 9EP, 9AMI, 9QJ. I have worked these stations successfully.

Have heard but not worked 11Z, 5AX, 5ZS, 5CQ, 5DK, 5BU, 5AB, 6DM, 8NU, 8CS, 8BA, 8NH, 8RZ, 9EN, 9NN, KIX, 9QJ, 9QW, 9YJ, 9HS, 9JV, 9UK, 9ME, 9DM, 9HY, 9HP, 9ARH, 9ALM, 9ABU, 9ZL, 9ANY, 9PC, 9GJ, 9AUK, 9EM, 9HU, 9YS, 9XM, 9YA, 9XL, 9YD, 9GW, 9JR, 9PI, 9WW, 9LO, 9HX, 9IJ, 9AIM, 9AIF, 9AIK, 9BA, 9ZN.

Following stations report signals:

SEG, 14 feet from fones at times.

9MQ, 20 feet from fones at times.

9ABD pretty fair.

Stations that report having heard me. 1ZF, 11Z, 2LK, 2PM, 5AB, 5ED, 5ZM, 5DK, 5DZ, 6OR, 6DM, 6SL, 8ZF, 8EG, 8ASG, 8ADX, 8HX, 8ACW, 8AAE, 8AJM, 8OH, 8CS, 8FZ, 8PA, 9JW, 9HS, 9ADX, 9AHW, 9FJ, 9QL, 9ZL, 9XM, 9UK, 9ZN, 9NN, 9EG, 9ALM, 9ME, 9VP, 9ZL, 9QU, 9AAU, 9UC, 9HQ, 9HX, 9AGB, 9MG, 9NU, 9AIF, 9AIK, 9RD, 9AGE, 9FF, 9AEF, 9QJ, 9HS.

HEARD BY 6FT AT STANFORD UNIVERSITY, CALIFORNIA.

6ANA, 6ABK, 6BD, 6DH, 6EA, 6EI, 6EV, 6FD, 6OT, 6PD, 6QW, 6ST, 6TG, 6TX, 6UG, 6UL, 6VS, 6WJ, 6OQ, "CM", 6NR, 6FK, 6TO, 6ALD, "AFD", 6WR, 6ZC, 6ZR, 6YS, 6DJ, 6LF, 6ZH, 6AMT, 6ZF, 6XN.

HEARD BY 6AHN, AT ALAMEDA, CALIFORNIA

6AV, 6ABK, 6DM, 6EA, 6HX, 6JG, 6KU, 6LP, 6NL, 6OK, 6OT, 6RG, 6SR, 6TG, 6TX, 6UL, 6UP, 6WL, 6WJ, 6WR, 6AAG, 6NN, 6ZW, 6ZH, 6ZN, 6YS, 6ZF, 6DP.

HEARD BY 6SH AT STOCKTON, CALIFORNIA.

6AO, 6AG, 6AV, 6AM, 6AAV, "SAC," 6ANA, 6AHN, 6AF, 6AC, 6AS, 6BJ, 6BY, 6DM, 6DH, 6EA, 6EE, 6EL, 6FT, 6FD, 6JZ, 6JG, "JS," 6KL, 6KU, 6LN, 6LH, 6NO, 6OT, 6PG, 6PN, 6RG, 6SL, 6SU, 6SV, 6VQ, 6WJ, 6WQ, 6WZ, 6WF, 6WV, 6OG, 6ZW, 6ZN, 6ZH, 6ZF, 6AMT.

STATIONS HEARD AT 9MA.

9ZF, 9ZL, 9ZG, 9ZN, 9KG, 9UR, 9HX, 9ADT, 9ADL, 9DV, 9AKP, 9DC, 9LW, 9QY, 9AAR, 9OV, 9RD, 9AIH, 9AN, 9VY, 9ABD, 9WG, 9ALD, 9RP, 9AVK, 9AIB, 9VH, 9UK, 9WL, 9XM, 9EP, 9YA, 9YJ, 9FW, 9NC, 9ALM, 9AU, 9AIM, 9XR, 9XD, 9XE, 9XB, 9NN, 9ANC, 9KD, 9WF, 9TA, 9KV, 9QN, 9APD, 9PF, 9AOH, 9VP, 9LX, 9JQ, 9GE, 9MK, 9JR, 9KH, 9AHK, 9AC, 9HQ, 9JX, 9RY, 9ABU, 9LO, 9AMI, 9NL, 9WR, 9TZ, 9BJ, 9PI, 9GY, 9EG, 9AOS, 9FB, 9ZS, 9OT, 9AEH, 9AEZ, 9AMT, 9JW, 9JQ, 8YO, 8XA, 8AID, 8ABE, 8ASG, 8YL, 8OE, 8AHL, 8XO, 8NH, 8MM, 8CO, 8APE, 8NG, 8NF, 8RY, 8BV, 8AX, 8BF, 8AP, 8DU, 8ZC, 4AA, 4DM, 3NB, 2NC, 1ARE.

Anyone having heard 9MA or 9BV I would consider it a personal favor to drop me a card stating how sigs were.

"9CF"

Robert Hall of St. Paul, Minn., writes: "The following is a bit of stations heard at my station (9CF) over a hundred miles away. 5AP, 5BV, 5BU, 5XC, 5DU, 8AEZ, 8AOI, 8ASG, 8CS, 8CX, 8LE, 8NH, 8NV, 8PP, 8WK, 9AAT, 9AAU, 9AAZ, 9ABD, 9AC, 9ACS, 9ACU, 9ADP, 9ADX, 9AFE, 9AGB, 9AHO, 9AHR, 9AHW, 9AKP, 9AKU, 9AMC, 9AMI, 9AIL, 9AIU, 9AIW, 9EA, 9BJ, 9BN, 9BV, 9CM, 9CP, 9CR, 9DK, 9DV, 9EG, 9EP, 9FA, 9FF, 9FK, 9GJ, 9GQ, 9GV, 9GY, 9HM, 9HO, 9HU, 9HX, 9IL, 9JB, 9JH, 9JW, 9LJ, 9LY, 9MQ, 9NE, 9NZ, 9ON, 9PA, 9PC, 9PD, 9PF, 9PP, 9PW, 9QA, 9QO, 9RO, 9RK, 9RQ, 9VG, 9VP, 9WC, 9WD, 9NG, 9WW, 9XA, 9XM, 9XN, 9YA, 9YE, 9YL, 9YO, 9YS, 9YU, 9ZF, 9ZL, 9ZL, 9ZN, 9ZO.

If any of the above will drop me a card I will be glad to let them know how they came in and when, and would consider it a great favor if any one hearing my signals would drop me a card.

REPORT OF 9ZL, LOUISVILLE, ILL.

To date have heard the following stations in the 4th, 5th and 8th districts:

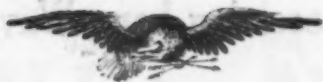
4AA, 4KY, 4AM, 4AC, 5BV, 5DU, 5BB, 5ZS, 5XC, 5ED, 5ZA, 5AX, 5YG, 5VR, 5AP, 5BY, 5BT, CV, 8PA, 8OT, 8OM, 8APM, 8OE, 8ALE, 8JZ, 8AEZ, 8NH, 8NF, 8YJ, 8CX, 8XA, 8CO, 8NY, 8ASG, 8NQ, 8AEH, 8KS, 8JA, 8YL, 8ABE. 85 stations in the 9th district have been heard. 62 messages handled to date.

Have been heard by the following stations over 500 miles away: 1ZM, 2AAZ, 3RO, 5DU, 5ED, CV, 6DM, 8OM, NRV, LDX, 6DM, is about 1,400 miles from here and LDX was about 1,100.

Heard by 6FD at Phoenix, Arizona.

February 1917

5BV, 5DU, 5ED, 5ZC, 6AC, 6AG, 6AK, 6AL, 6AU, 6AV, 6ABK, 6ABR, 6AHN, 6AKY, 6ANA, 6ANI, 6BD, 6BJ, 6BV, 6BY, 6CL, 6CR, 6DH, 6DP, 6DT, 6EA, 6EG, 6EI, 6EV, 6FI, 6FT, 6GE, 6GH, 6GK, 6IB, 6IO, 6JG, 6KC, 6KU, 6LG, 6LM, 6LN, 6LO, 6LP, 6NL, 6NN, 6OT, 6PK, 6PU, 6QJ, 6QU, 6QW, 6RG, 6RW, 6SF, 6SH, 6SL, 6SJ, 6ST, 6TG, 6TL, 6TQ, 6TR, 6TT, 6TX, 6UG, 6UL, 6UP, 6VQ, 6WI, 6WJ, 6WR, 6WZ, "JS", 6ZC, 6ZN, 6YS, 8AEZ, 9ABD, 9AHO, 9AMT, 9JW, 9LO, 9ZF, 9ZK, 6KIW,



PICTORIAL SECTION

Anyone Who Hasn't Heard 8NH

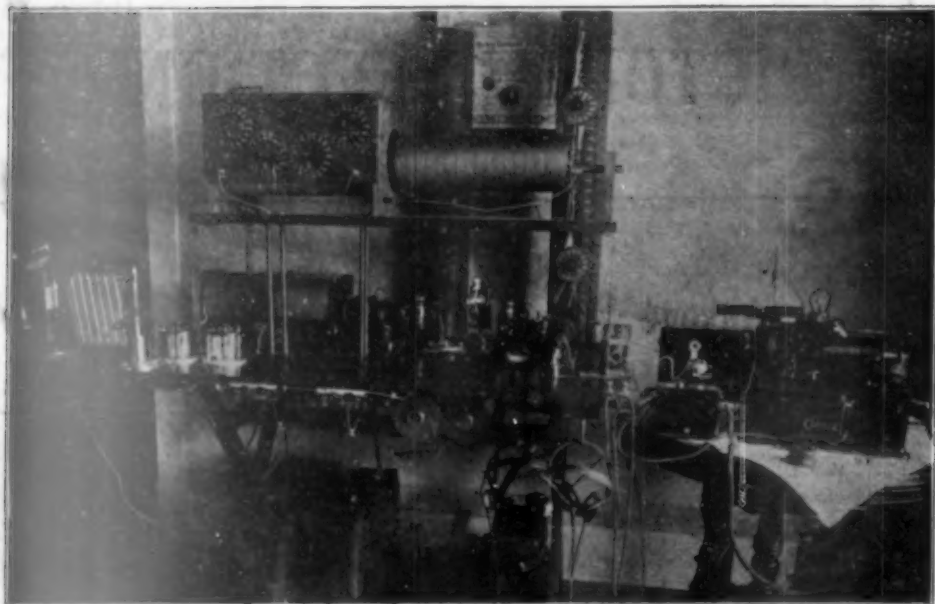


Here is the chance to see 8NH, the station of Mrs. Candler of St. Marys, Ohio. This great relay station has been copied in thirty states and has communicated direct with 9ZF of Denver, Col., and ships off Key West, Fla., and Cape Race, New-

foundland. The most distant station copied at 8NH is 7ZC of Lewiston, Mont.

Mrs. Candler's aerial is 87 feet long, 58 feet high, six wires, lead-in from the center. The station is now equipped for receiving long undamped waves.

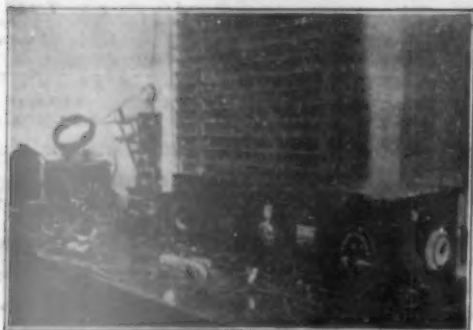
Receiving Long Waves



is the specialty of Mr. Harvey L. Gamer, Electrical Engineer, of Omaha, Neb. He has received with the station illustrated herewith, OUI and POZ of Germany and KHL of Honolulu. WSL, WGG and others of the United States come in so loud that the signals can be transmitted over the

telephone to any part of his city and vicinity. Wax records have also been made of them with the special recorder shown in the photograph. The large loose coupler was designed to tune up to 15,000 meters in connection with Mr. Gamer's aerial system.

Selma High School



The accompanying photograph shows the station of the Selma High School of California. The apparatus being all of standard make, will be easily recognized. They radiate 2.8 amps with a new type Thordarson, and complementary Murdock instruments.

FOR SALE & EXCHANGE



FOR SALE AND EXCHANGE: Twenty-five dollar set of football togs, including suit, head gear, shoulder pad, \$5.00 shoes, elbow pad and socks; all Spalding made and in A1 condition. The suit has been used in four games, the rest is unused. Also have a .22 Winchester—will sell or exchange for wireless goods. All letters answered. Atlee Gulleddge, Box No. 592, Fort Pierce, Fla.

FOR SALE: The Book of Wireless, Cost \$1.00, sell for \$.75; Harpers Electricity Book for Boys, cost \$1.50, sell for \$1.00; the Boy Mechanic, Vol. 1, cost \$2.00, sell for \$1.00; or all for \$2.00. A Knapp motor, runs on three dry cells, cost \$2.00, sell for \$1.00; $\frac{1}{2}$ spark coil K.-W make, \$.50; spark gap Marconi patented, \$.40; Government postal scale, gives weight and prices for all mailing matter, cost \$3.00, sell for \$.75; typewriter, Remington No. 6, cost \$100., sell for \$15.; All are in first-class condition. Typewriter two and one-half years old. **WANT:** A Navy type loose coupler, Adams-Morgan make preferred; a Morse Recorder; loading and tuning coils; any good detector that will not jar out. Must be in good condition. Harvey Mitchell, 1352 Oak Street, N. W., Washington, D. C.

FOR SALE OR EXCHANGE: Have installed audion, therefore wish to sell United Wireless Telegraph Company potentiometer and current reversing switch, Turney loading coil, type O crystallo, test circuit resonator, galena detector on onyx base with dustproof glass cover, U. W. T. Co., carborundum crystals. Can use variables, also set of Brandes Navy type phones. All letters answered. H. Silbersdorf, 631 Pavia Ave., Jersey City, N. J.

FOR SALE: One AA crystallo, \$.4.; $\frac{1}{4}$ Kw. Blitzen, \$10.; $\frac{1}{4}$ Kw. Winger \$6.; one Murdock oscillation transformer (fumed oak) \$4.50; one set parts, never used, \$.4.; Bunnell key No. 6 contacts, \$.30; rotary gap (machine made, special type) with 1-16 R. A. Co. 8,000 r. p. m. motor, \$12.50; without motor, \$6.50, less than the raw material cost; Premo Pocket C Filmplate postcard size camera with sole leather carrying case and metal tripod, cost \$22.50, for \$12.50; Termas cash F. O. B. Urbana; all letters answered. Clayton Hunt, R. R. No. 12, Urbana, Ill.

EXCHANGE: New $\frac{1}{4}$ K. W. Packard Transformer, in case, for small amateur's bench lathe. W. T. Gravelly, Box 245, Danville, Va.

FOR SALE OR EXCHANGE: One Weston Duplex meter, Curtis high potential transformer desk telephone set, cheap for quick sale. Will exchange for regenerative Mesco or a Paragon set. Also will accept Audio Tron sets and bulbs or other high grade equipment. Richard G. Devaney, 4624 Winthrop St., Pittsburgh, Pa.

WANTED: Second-hand omnigraph. State model, condition and lowest cash price. R. L. Ide, 800 South 4th St., Springfield, Ill.

FOR SALE: Have phonograph motor in A1 condition, valued at \$10. Want in exchange, telephone wire copper, or audion or Electron relay bulb, bulb preferred. H. E. Gerrodetti, Kinderhook, N. Y.

WANTED: D. C. Generator suitable for charging 24 volt storage battery. State lowest cash price and full particulars. S. H. Scheib, 1504 McGavock St., Nashville, Tenn.

FOR SALE: Electro Vario-Selective coupler, cost \$6.50, sell for \$5.00; new and in A1 condition. Also brand new 500 shot Daisy air rifle, \$1.35, or what have you to exchange? Caesar Forcare, 566 Herkimer St., Brooklyn, N. Y.

WANTED: Audion transformer and other instruments. Want to exchange for Carneau pigscons. Have 25 mated pair and 70 young, all guaranteed. What have you and how many birds will you take for same? Wm. E. Lineback, Jr., Winston-Salem, N. C.

FOR SALE: All new E. I. 17 plate rotary variable, \$1.75; Duck 1600 meter coupler, \$.3.; two unmounted .01 mfd. units Clapp-Eastham glass plate condenser, each \$1.50. Murdock hinge type oscillation transformer, \$2.50; Clapp-Eastham single slide tuner, \$1.; Duck Jr. helix, \$.75. Ruel C. Hanks, 17 Crosby St., Augusta, Me.

FOR SALE: $\frac{1}{4}$ Kw. Packard transformer, (800 miles), \$10.; Chambers motor \$.3.; three sections copper sheet moulded condenser, \$.3.; Murdock hinged oscillation transformer, \$1.50.; line protector, \$1.50; wireless key, \$.1.; Murdock loose coupler (900 meter), \$.3.; Menominee loose coupler (1,200 to 1,800 meter), \$.2.; loading coil, \$.50; Murdock variable condenser (21 plate), \$.2.; baby switch, D. P. S. T., \$.10; baby switch, D. P. D. T., \$.15; new pair Brandes Superior head set, (2,000 ohms), \$.400; Murdock commercial type aerial switch, \$1.50; Perkins 600 v. lightning switch, \$1.50; fixed condenser, \$.25. Frank S. Wales, Polo, Ill.

FOR SALE OR EXCHANGE: AMCO type oscillation transformer, A1 condition, for sets including $\frac{1}{4}$ Kw., \$4.75; Electro Vario selective coupler, brand new, \$.5.; Electro $\frac{1}{4}$ Kw. transformer coil, \$4.75; Electro Junior phones, \$.2.; Superiors, \$.4.; bridge type interrupter, \$.1.; red fiber aerial switch, about thirty-five degrees throw, \$.2.; three 1000 ohm extension bells, brand new, never unpacked, \$3.00 each; Would like cabinet receiving transformer, large oscillating coils, tubular audion panels, with or without bulbs, seven strand wire, Brandes Navy or Trans. and variables. Write for special cash prices or what you have to exchange. L. E. Mason, N. Lake Blvd., Albert Lea, Minn.

FOR SALE: Receiving cabinet, 3,500 meters with Audiotron, \$15. with Murdock condenser blk. condenser. Philip Mueller, 209 Second St., La Salle, Ill.

EXCHANGE: Four units of "Monotone" quenched spark gap, perfect condition, for three sections of Murdock moulded condenser. Clarence Bowers, 21 Goodyear Ave., Akron, Ohio.

FOR SALE: Two complete receiving sets, (one in cabinet), 2,000 and 1,000 ohm phones with headband and cord; $\frac{1}{4}$ Kw. transformer, rotary gap, condenser and helix. **WANTED:** A 43 and a 21 plate variable condenser. Write for particulars. Augustine Calvelli, Morgan Hill, Cal.

FOR SALE OR EXCHANGE: $\frac{1}{4}$ Kw. Chelco transformer, can pull five amps., \$3.; R. L. C. 2 Special Mignon cabinet, CHEAP. Photo sent on request; 200 ft. No. 14 bare copper wire, never used; oscillation transformer, pancake type, wound with $\frac{1}{2}$ inch brass ribbon. Address, Radio, 1218 East Erie Ave., Lorain, Ohio.

FOR SALE: One pair of good storage battery plates, good shape, charged once, 20 ampere hour capacity, \$1.00; 3,000 ohm phones, best make, guaranteed, write for particulars; one brand new copy of Richardsons Handbook for Motion Picture Operators and Theatre Managers, not even soiled, cloth bound, cost \$4.00, sell for \$2.50, second edition revised. **WANT:** Chambers large inductive tuner, No. 749, must be in good shape and reasonable; or would be interested in a set of good long wave inductances, if of good make. Want to know who has a C. E. Hytens set, either $\frac{1}{2}$ or one Kw. in perfect condition who wishes to sell it at a reasonable figure for cash. Only sets which are guaranteed to be mechanically and electrically in best of shape will be considered. All letters answered; state all first letter, I buy for cash. Wm. F. Justus, 278 So. Monroe Ave., Columbus, Ohio.

FOR SALE: Complete sending set, \$5.00; one inch spark coil, telegraph key, gap and Leyden jar. Receiving set, loose coupler double sliders and four binding posts on primary silk wound, and hard rubber front on secondary. Detector and 75 ohm double receiver, leather headband and cord, \$5.00. Filament ammeter, \$4.50; Navy relay for break in system or other uses, \$6.50; three 2 MF condensers, mica; three nickel plated telephone switches, cost \$1.50, sell for \$7.50. The last four items are all brand new. 1,000 ohm head set, two double pole receivers, leather headband and cord, \$3.00. Tuning coil, \$1.50. Encyclopedia of Electrical Engineering, two volumes, \$2.50. Donald B. Jackson, 444 St. Nicholas Ave., New York, N. Y.

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WANTED: To exchange galena cat whisker detector, $\frac{1}{2}$ inch spark coil, key D. P. S. T. switch, four sections transmitting condenser, four secondaries, for $\frac{1}{4}$ in coils, several horse shoe magnets, also several vibrator parts with platinum points on them. Will trade all for four volt, 40 amp. hr. storage battery which must be in fairly good condition. J. Richard Todd, Box No. 125, Louisville, Ill.

FOR SALE: Twenty-five lb. transformer iron already cut for transformer, \$3.50; rotary quenched gap, \$4.00; 15,000 meter long wave coupler, \$15.; long wave loading coil, \$4.00; 3,000 meter loading coil, \$1.50; Thor motorcycle engine \$12.00; 2,000 meter loose coupler, \$4.00. **WANT:** Variables and 110 v. motors. R. D. Duffield, Van Wert, Ohio.

FOR SALE: First \$22. takes one Kw. transformer complete 1-6 Kw. transmitting set (has rotary); \$8.; $\frac{1}{4}$ H. P. hot-air engine, \$2.50; Clapp-Eastham \$18. coupler, \$7.; Arlington coupler, \$6.50. **WANT:** 60 cycle $\frac{1}{4}$ to $\frac{1}{2}$ H. P. induction motor. L. A. Gebhard, 1127 Ellicott St., Buffalo, N. Y.

FOR SALE: Two-slide tuning coil, \$1.40; two crystal detectors, \$.35 each; Mesco detector, \$1.; Bunnell sounder, \$1.25; three receiving condensers, \$.30 each; oscillation transformer, only \$3.75. All in O. K. condition and postpaid. W. F. Kelley, 4614 Henry St., Pittsburgh, Pa.

FOR SALE: Brandes Navy headset, RJ5 Audion cabinet, Arlington loose coupler, Murdock 43 plate variable and Savage .22 high power rifle. Write Warren Sanford, 1144 Fourth Ave., Huntington, W. Va.

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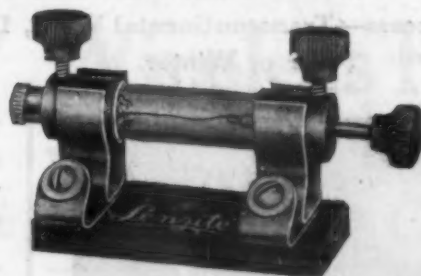
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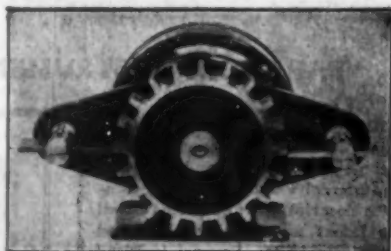
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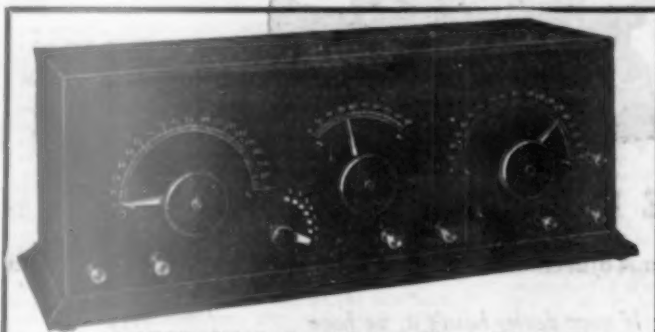
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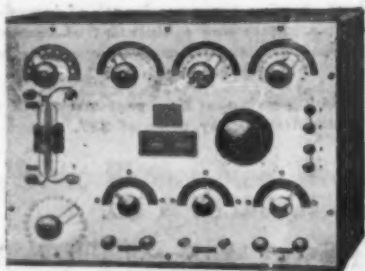
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Designed and built by experts from selected materials. Capacity, insulation and magnetic losses are reduced to a minimum by direct copper connections and a careful arrangement of the tuning units. Coupling coil has a wide range of adjustment and permits very selective tuning.

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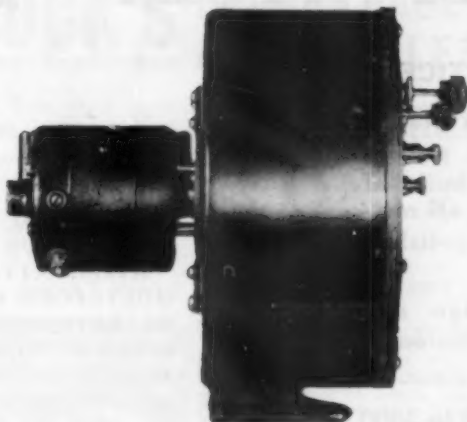
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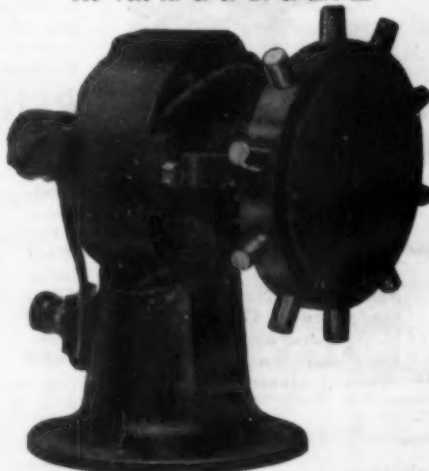
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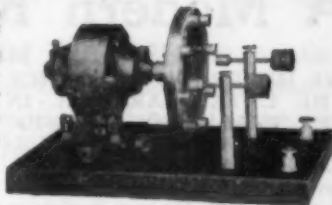
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Copper Electrodes,

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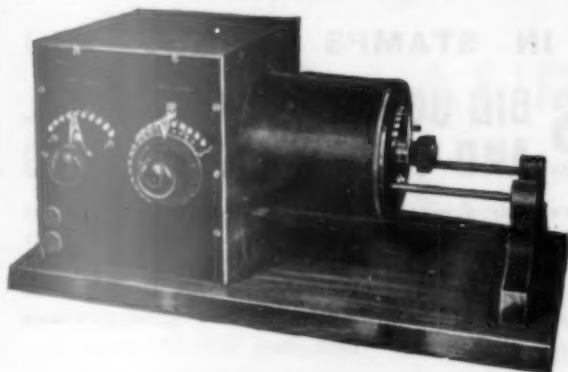
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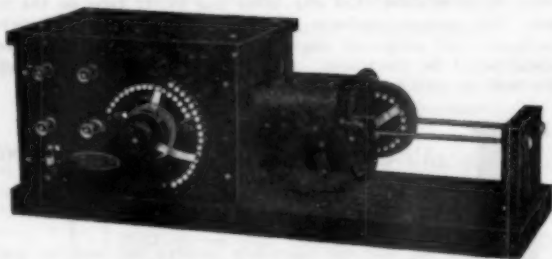
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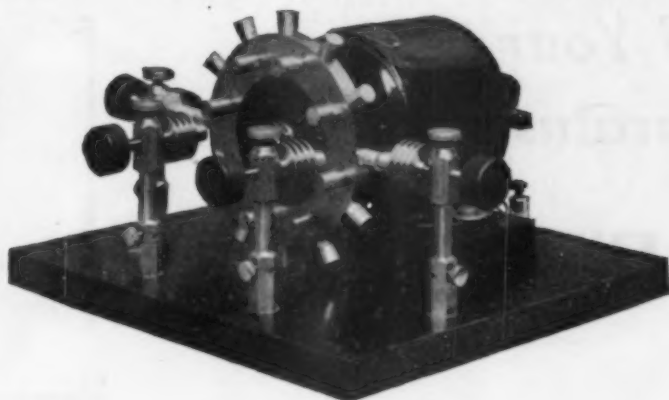


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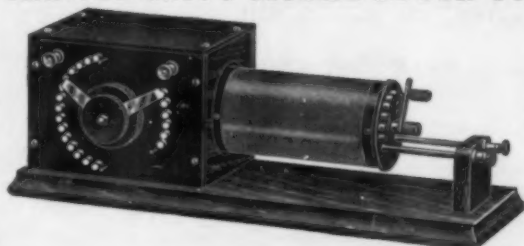
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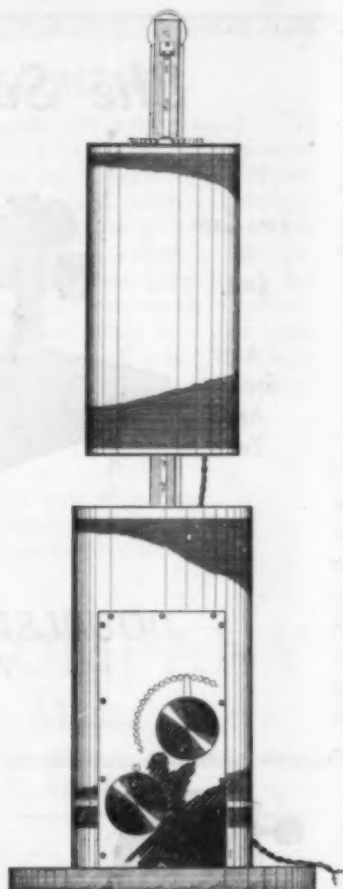


Fig. 19. A 15000 meter-coupler taking a square foot of table space.

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